This document provides pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Major, Municipal permit. The discharge results from the operation of a 3.0 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia Water Quality Standards (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained within this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1.	Facility Name and Mailing Address:	Town of Orange Wastewater Treatment Plant 119 Belleview Ave. Orange, VA 22960	SIC Code:	4952 WWTP
	Facility Location:	13222 Spicers Mill Road Orange, VA 22960	County:	Orange
	Facility Contact Name:	Michelle Steinberger, Chief Operator	Telephone Number:	(540) 672-3112
	Facility Email Address:	ams@townoforangeva.org		
2.	Permit No.:	VA0021385	Expiration Date:	1 August 2016
	Other VPDES Permits:	VAN020025		
	Other Permits:	VA0053121 - Town of Orange's Water Treatment Plant		
	E2/E3/E4 Status:	Not Applicable		
3.	Owner Name:	Town of Orange		
	Owner Contact / Title:	Gregory S. Woods/Town Manager	Telephone Number:	(540) 672-5005
	Owner Email Address:	townmanager@townoforangeva.org		
4.	Application Complete Date:	27 January 2016		
	Permit Drafted By:	Caitlin Shipman	Date Drafted:	4/21/2016
	Draft Permit Reviewed By:	Anna Westernick	Date Reviewed:	4/25/2016
	Draft Permit Reviewed By:	Alison Thompson	Date Reviewed:	5/2/2016
	Public Comment Period :	Start Date: July 1, 2016	End Date:	July 30, 2016
5.	Receiving Waters Information:	See **Attachment 1** for the Flow Frequency Determination		
	Receiving Stream Name:	Rapidan River	Stream Code:	3-RAP
	Drainage Area at Outfall:	233 square miles	River Mile:	48.2
	Stream Basin:	Rappahannock	Subbasin:	Rapidan – Upper Rappahannock
	Section:	4	Stream Class:	III
	Special Standards:	None	Waterbody ID:	VAN-E13R/RA30
	7Q10 Low Flow:	2.68 MGD	7Q10 High Flow:	25.14 MGD
	1Q10 Low Flow:	1.49 MGD	1Q10 High Flow:	19.86 MGD
	30Q10 Low Flow:	6.65 MGD	30Q10 High Flow:	35.71 MGD
	Harmonic Mean Flow:	55.52 MGD	30Q5 Flow:	10.61 MGD

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

X	State Water Control Law	**X**	EPA Guidelines
X	Clean Water Act	**X**	Water Quality Standards
X	VPDES Permit Regulation		Other (PES, Occoquan Policy, Dulles)
X	EPA NPDES Regulation		(GP – note regulation and title)

7. Licensed Operator Requirements: Class I

8. Reliability Class: Class I

9. Facility / Permit Characterization:

	Private	X	Effluent Limited		Possible Interstate Effect
	Federal	X	Water Quality Limited		Compliance Schedule
	State	X	Whole Effluent Toxicity Program		Interim Limits in Permit
X	POTW	X	Pretreatment Program		Interim Limits in Other Document
X	eDMR Participant	X	Total Maximum Daily Load (TMDL)		

10. Wastewater Sources and Treatment Description:

This wastewater treatment plant primarily treats municipal wastewater from the Town of Orange while also serving a small portion of Orange County. The facility underwent an extensive upgrade and expansion in 2010; the facility's design flow increased to 3.0 MGD and enhanced nutrient removal (ENR) technology was added. The facility current only utilizes one of the three trains available and operates at approximately one third of the design flow. The CTO was issued June 8, 2011 (**see Attachment 2**).

Since the upgrade in 2010, the existing primary clarifier, now the bio-augmentation tank, remains in service to promote hydrolysis and acid fermentation. This increases volatile fatty acids entering the downstream anoxic zones, which enhances nutrient removal. The existing secondary clarifier was converted to a primary clarifier and equalization basin, but was later demolished.

Sludge from the Town of Orange's Water Treatment Plant is received at the Town of Orange's Wastewater Treatment Plant approximately once per month. Sludge is pumped to the facility and held in the bio-augmentation tank. Additionally, plant drains, filter backwash, filtrate from the belt filter presses, and decant from aerobic sludge digesters are received at this location. Transfer pumps convey this side stream to the digester.

Primary Treatment

Wastewater enters the facility through two mechanical bar screens with a compactor system, removing large debris in the process. Water then flows through a pump station with a flow meter and then through a Grit King, removes the remaining debris.

Secondary Treatment

The biological process in place is a single sludge suspended growth process, known as the 4-stage Bardenpho System. Based on an annual average daily flow of 3.0 MGD, the unit has a total volume of 1.5 million gallons. The anticipated BOD load is 4,620 lb/day or 38.5 lb/d/1,000 ft^3 based on a 0.90 million gallons in the nitrification and re-aeration basins.

Three treatment trains are available with room to add another train in the future. In each train, the nitrification basin is divided into two compartments. Because the waste strength is higher in the first basin, more air will be required. Analysis shows that more than 50% of BOD and 90% of TKN is oxidized in the first chamber. Accordingly, the first chamber requires 50% more air flow than the second. Coarse bubble diffusers are specified to insure adequate mixing during low loading periods when lower air flow rates will be necessary. Pumping is provided for return mixed liquor recycle flow for each train.

The volumes of the first and second anoxic zones are equal. Denitrification rates for endogenous respiration are much lower in the second anoxic basin than the first. Because of this, an additional carbon source may need to be added during cold weather. This was included in the original design. Additionally, each basin will be provided with floating or submersible mixers in the anoxic zone. Magnesium hydroxide may be added at the influent splitter box or treatment basins for pH control.

Secondary Clarification

After secondary treatment, water enters a splitter box and is divided between three 68-foot diameter circular secondary clarifiers. Room is available onsite for an additional secondary clarifier. Each secondary clarifier has a return activated sludge pump station. Alum or ferric chloride is added at the secondary clarifier splitter box to assist in removing phosphorus or to aid sedimentation, filtration, and dewatering of residuals. Sodium hypochlorite use to be added to the wiers of the clarifiers between May and September to control algal growth, but has not been used in the past four years. Algal growth is now controlled by manually cleaning the clarifiers weekly.

Effluent Filtration
Tertiary effluent filtration is achieved by two cloth media filter units, which operate in parallel. Each filter unit has twelve disks, totaling 646 ft^2 of filtration surface area per filter, resulting in a total of 1,292 ft^2 of filtration area. The woven cloth media has a nominal pore opening of 10 microns that is capable of producing a low TSS effluent under a wide range of loading conditions. At the design flow of 3.0 MGD, the hydraulic loading rate will be approximately 1.6 gpm/ft^2. At peak flow conditions of 8.0 MGD, the hydraulic loading rate will be approximately 4.3 gpm/ft^2.

Disinfection and Final Discharge
Disinfection is achieved through the use of two UV filter banks operating in parallel. After disinfection, the effluent flows through a Parshall Flume, where it is metered, and a 12-step cascade aerator. Discharge is to the Rapidan River through a 24-inch shore-based outfall approximately 500 ft downstream of a coffer dam. At the discharge area, the receiving stream is approximately 80 ft wide.

Nine stormwater outfalls for the Town of Orange Wastewater Treatment Plant were permitted under the VPDES General Permit for Stormwater Discharges Associated with Industrial Activity (VAR051419). A site review was conducted by DEQ staff on March 13, 2014. By letter dated April 24, 2014, DEQ approved the no-exposure certification to the facility (**Attachment 3**). The VPDES General Permit for Storm Water Discharges Associated with Industrial Activity was terminated on May 24, 2014.

See **Attachment 4** for a facility schematic/diagram.

TABLE 1
OUTFALL DESCRIPTION

Number	Discharge Sources	Treatment	Design Flow	Latitude / Longitude
001	Domestic and/or Commercial Wastewater	See Section 10	3.0 MGD	38° 15′ 56.8″ 78° 09′ 21.3″
Stormwater Outfalls 001 - 009	Non-Contaminated Stormwater	None	Not Applicable	Various
See **Attachment 5** for the Madison Mills, DEQ#185C topographic map.				

11. Sludge Treatment and Disposal Methods:

Sludge is wasted daily and held in an aerated sludge holding tanks before being dewatered by a belt filter press. Decanted and dewatered sludge water is returned to the bio-augmentation tank. De-watered sludge is transported to the Orange County Landfill for disposal. In the application for the permit's reissuance, the Town of Orange originally planned to use land application as a back-up sludge disposal method.

Per correspondence on May 2, 2016, the permittee chose to not include land application as a back-up method for sludge disposal (as stated in the application).

12. Other Permitted Discharges Located Within Waterbody VAN-E13R:

TABLE 2
PERMITTED DISCHARGES

ID / Permit Number	Facility Name	Type	Receiving Stream
VAG406450	Rutt David Property	Single Family Home <1000 gpd	Laurel Run, UT
VAR051040	American Woodmark – Orange Dimension Plant	Storm Water Industrial	Laurel Run,UT
VA0060879	Rapidan Baptist Camp and Conference Center	VPDES Individual Permit	Rapidan River, UT
VA0027839	Woodberry Forest School		Rapidan River
			Rapidan River, UT
3-RAP045.08	DEQ Monitoring Station at Route 15	Ambient	Rapidan River

13. Material Storage:

TABLE 3 MATERIAL STORAGE		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Alum	8,000 gallons	Stored in a concrete containment area that drains to the influent pump station.
Magnesium Hydroxide	4,000 gallons	
Micro Glycerin	1,000 gallons	

14. Site Inspection:

A site inspection was performed by NRO Water Compliance staff on October 30, 2015 (see **Attachment 6**). NRO Water Permitting staff, Caitlin Shipman and Anna Westernik, visited the site on April 8, 2016.

15. Receiving Stream Water Quality and Water Quality Standards:

a. Ambient Water Quality Data

This facility discharges to the Rapidan River. DEQ ambient monitoring station 3-RAP045.08 is located at Route 15, approximately 3.12 miles downstream from Outfall 001.

Class III, Section 4.

DEQ monitoring stations located in this segment of the Rapidan River:
- ambient monitoring station 3-RAP045.08, at Route 15

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. The aquatic life and wildlife uses are considered fully supporting. The fish consumption use was not assessed.

b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

TABLE 4 IMPAIRMENT AND TMDL INFORMATION FOR THE RECEIVING STREAM SEGMENT						
Waterbody Name	Impaired Use	Cause	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the Draft 2014 Integrated Report						
Rapidan River	Recreation	*E. coli*	Rapidan River Bacteria TMDL 12/05/2007	5.22E+12 cfu/year *E. coli*	126 cfu/100 ml *E. coli* --- 3.00 MGD	---

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal. The draft 2012 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued the Bay TMDL on December 29, 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

The Chesapeake Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards has been identified. This aggregate watershed loading is divided among the Bay states and their major tributary basins, as well as by major source categories [wastewater, urban storm water, onsite/septic agriculture, air deposition]. Fact Sheet Section 17.e provides additional information on specific nutrient limitations for this facility to implement the provisions of the Chesapeake Bay TMDL.
The full planning statement is found in **Attachment 7**.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Rapidan River is located within Section 4 of the Rappahannock River Basin and classified as Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32° C and maintain a pH of 6.0 – 9.0 standard units (S.U.).

The Freshwater Water Quality/Wasteload Allocation Analysis located in **Attachment 8** details other water quality criteria applicable to the receiving stream.

Some Water Quality Criteria are dependent on the pH, temperature and total hardness of the receiving stream and/or final effluent. These values were utilized to determine the criterion found in **Attachment 8** for the following pollutants: pH, total hardness.

pH and Temperature for Ammonia Criteria

The fresh water, aquatic life Water Quality Criteria for ammonia is dependent on the instream pH and temperature. Since the effluent may have an impact on the instream values, the pH and temperature values of the effluent must also be considered when determining the ammonia criteria for the receiving stream. The 90th percentile pH and temperature values are utilized because they best represent the critical conditions of the receiving stream.

Ambient water quality data for waterbody VAN-E13R were available and are presented in **Attachment 9**. The 90th percentile value for pH is 7.6 S.U., the 90th percentile annual and wet season temperatures are respectively 24.6 °C and 13.8 °C.

Staff re-evaluated the effluent data for pH and determined it was significantly different from the data used to establish ammonia criteria and subsequent effluent limits in the previous permit. Based on the pH values reported in the Discharge Monitoring Reports (DMRs) from 2011 – 2016, **t**he 90th percentile maximum pH and 10th percentile maximum pH values are 8.6 S.U. and 7.8 S.U. respectively. The effluent pH data calculations are presented in **Attachment 10**. During the last permit reissuance, the 90th percentile maximum pH and 10th maximum pH values were 8.1 S.U. and 6.1 S.U.

A default temperature value of 25º C and an assumed temperature value of 15° C for summer and winter, respectively, were utilized since effluent temperature data were not readily available.

Hardness Dependent Metals Criteria

The Water Quality Criteria for some metals are dependent on the receiving stream and/or effluent total hardness values (expressed as mg/L calcium carbonate).

The hardness dependent metals criteria in **Attachment 8** are based on the average effluent value from the Discharge Monitoring Reports from 2011 – 2016 of 120.7 mg/L $CaCO_3$ and on the average value for waterbody VAN-E13R 29.6 mg/L $CaCO_3$.

Bacteria Criteria

The Virginia Water Quality Standards at 9VAC25-260-170A state that the following criteria shall apply to protect primary recreational uses in surface waters:

E. coli per 100 mL of water shall not exceed the following:

	Geometric Mean[1]
Freshwater *E. coli* (N/100 mL)	126

[1]For a minimum of four weekly samples taken during any calendar month

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Rapidan River, is located within Section 4 of the Rappahannock River Basin. This section has not been designated with a special standard.

e. Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on February 1, 2016 for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened or endangered species were identified within a 2 mile radius of the discharge: Shenandoah Salamander *(Plethodon Shenandoah)*, Dwarf Wedgemussel *(Alasmidonta heterodon)*, Northern Long-Eared Bat *(Myotis septentrionalis)*, Peregrine Falcon *(Falco peregrines)*, Upland Sandpiper *(Bartramia longicauda)*, Loggerhead Shrike *(Lanius ludovicianus)*, Green Floater *(Lasmigona subviridis)*, Migrant Loggerhead Shrike *(Lanius ludovicianus migrans)*, Regal Fritillary *(Speyeria idalia idalia)*, Bald Eagle *(Haliaeeturs leucocephalus)*, and Yellow Lance *(Elliptio lanceolata)*. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore protect the threatened and endangered species found near the discharge.

In addition, the Virginia Department of Conservation and Recreation; the Virginia Department of Game and Inland Fisheries; and the United States Fish and Wildlife Service were coordinated during this reissuance per the procedures as set forth in the 2007 Memorandum of Understanding (MOU) concerning Threatened and Endangered Species Screening for VPDES Permits. The purpose of this coordination is to obtain input from other agencies during the permitting process to ascertain potential adverse impacts to threatened and endangered species and/or their habitats.

Any comments from these agencies are located in Section 27 of this Fact Sheet.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards for all parameters the Board has adopted criteria for, not including fecal coliform. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

This segment of the receiving stream, the Rapidan River, has no noted downstream impairments. The aquatic and wildlife uses are considered fully supporting. The fish consumption use was not assessed (**Attachment 7**). It is current agency guidance that if data or information is not available to make a determination, the stream is assumed to be Tier 2 (Guidance Memo No. 00-2011). Therefore, it is assumed that the fish consumption use is not impaired. Additionally, there are no 303(d) impairments listed within 15 miles downstream.

This facility has been in place since before the adoption of the Virginia Water Quality Standards on March 30, 1992. An extensive upgrade and expansion was completed in December 2010. This upgrade included implementing enhanced nutrient removal technology so the facility could comply with EPA's Chesapeake Bay TMDL and Virginia's Watershed Implementation Plan for the Chesapeake Bay TMDL. The upgrade and expansion implemented was based on limits applicable to a Tier 1 stream. Therefore, the proposed limits in this permit have been established by determining wasteload allocations which will result in maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLAs) are calculated. The WLA values are then compared with available effluent data to determine the need for effluent

limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are then calculated on the most limiting WLA, the required sampling frequency and statistical characteristics of the effluent data.

A review of the water quality monitoring data for the receiving stream indicated that the water quality of the stream in the vicinity of the discharge exceeds the water quality standards. Due to the higher quality waters of the receiving stream, if the facility expands or undergoes an upgrade in the future, then the receiving stream may be designated as a Tier 2 water body at the following permit reissuance and the limit derivations would be based on Antidegradation Wasteload Allocations.

a. Effluent Screening

Effluent data obtained from the permit application, chronic toxicity testing and Discharge Monitoring Reports (DMRs) has been reviewed and determined to be suitable for evaluation. Please see **Attachment 12** for a summary of effluent data.

The following pollutants require a wasteload allocation analysis: Antimony, Copper, Lead, Mercury, Nickel, Zinc, and Ammonia.

b. Mixing Zones and Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f) (Q_s)] - [(C_s) (f) (Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- C_o = In-stream water quality criteria
- Q_e = Design flow
- Q_s = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; 30Q10 for ammonia criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- C_s = Mean background concentration of parameter in the receiving stream.

The Water Quality Standards contain two distinct mixing zone requirements. The first requirement is general in nature and requires the "use of mixing zone concepts in evaluating permit limits for acute and chronic standards in 9VAC25-260-140.B". The second requirement is specific and establishes special restrictions for regulatory mixing zones "established by the Board".

The Department of Environmental Quality uses a simplified mixing model to estimate the amount of mixing of a discharge with the receiving stream within specified acute and chronic exposure periods. The simplified model contains the following assumptions and approximations:

- The effluent enters the stream from the bank, either via a pipe, channel or ditch.
- The effluent velocity isn't significantly greater (no more than 1 - 2 ft/sec greater) than the stream velocity.
- The receiving stream is much wider than its depth (width at least ten times the depth).
- Diffusive mixing in the longitudinal direction (lengthwise) is insignificant compared with advective transport (flow).
- Complete vertical mixing occurs instantaneously at the discharge point. This is assumed since the stream depth is much smaller than the stream width.
- Lateral mixing (across the width) is a linear function of distance downstream.
- The effluent is neutrally buoyant (e.g. the effluent discharge temperature and salinity are not significantly different

from the stream's ambient temperature and salinity).

- Complete mix is determined as the point downstream where the variation in concentration is 20% or less across the width and depth of the stream.

- The velocity of passing and drifting organisms is assumed equal to the stream velocity.

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent (e.g., total residual chlorine where chlorine is used as a means of disinfection) and where effluent data indicate the pollutant is present in the discharge above quantifiable levels. With regard to the Outfall 001 discharge: ammonia as N is likely present since this is a WWTP treating sewage and data from the permit application indicates Antimony, Copper, Lead, Nickel, Mercury, and Zinc are present in the discharge. As such, **Attachment 13** details the mixing analysis results for WLA derivations for these pollutants.

c. Effluent Limitations, Outfall 001 – Toxic Pollutants

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN

Staff reevaluated pH and temperature and has concluded it is significantly different than what was used previously to derive ammonia criteria. As a result, staff used the new data to determine new ammonia water quality criteria, new wasteload allocations (WLAs) and new ammonia limits (**Attachment 11**). DEQ guidance suggests using a sole data point of 9.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge containing domestic sewage. Using this guidance, a monthly ammonia limit of 1.8 mg/L and a weekly ammonia limit of 2.3 mg/L were calculated (**Attachment 11**).

The toxicity of ammonia is dependent on the pH of the effluent and/or receiving stream. Ammonia can exist as both "ionized ammonia" (NH_4) and "un-ionized ammonia" (NH_3). Research has shown that the un-ionized ammonia is the fraction that is toxic to aquatic life while the ionized ammonia has been found to have little or no toxic effect. Furthermore, it has been demonstrated that the un-ionized fraction increases correspondingly with rising pH values; thus, increasing potential toxicity and the basis for the above calculated ammonia limits. It is generally accepted that total Kjeldahl nitrogen (TKN) consists of approximately 60% ammonia in raw wastewater. As the waste stream is treated, the ammonia component of TKN is converted to nitrate (NO_3) and nitrite (NO_2).

Effluent TKN data for the past 5 years was obtained from DMRs and reviewed with this reissuance. During the last permitting term, the average concentration of TKN was 1.7 mg/L and the 90% maximum concentration was 3.50 mg/L.

The dissolved oxygen model was run in February 2016 for the 3.0 MGD flow tier. The model indicates that a TKN of 7.0 mg/L is protective of the dissolved oxygen standard (**Attachment 14**). Assuming that 60% of the TKN present is ammonia, a TKN limit of 7.0 mg/L is not protective of ammonia criteria. It is staff's professional judgment that a TKN limit of 3.0 mg/L is protective of the dissolved oxygen standard and the ammonia wasteload allocation and should be implemented with this reissuance. A TKN limit is being given in lieu of an Ammonia limit.

The Environmental Protection Agency (EPA) finalized new, more stringent recommended ammonia criteria in August 2013; possibly resulting in significant reductions in ammonia effluent limitations. It is staff's professional judgment that the incorporation of those criteria into the Virginia Water Quality Standards is forthcoming. This and many other facilities may be required to comply with these new criteria during their next respective permit terms. The ammonia criteria will be revisited during the next reissuance.

2) Total Residual Chlorine (TRC)

Chlorine is not used as disinfection at this facility and is no longer being added to the wiers of the clarifiers to control algal growth. Therefore, chlorine limits are not applicable and were not included in this reissuance.

3) Metals/Organics

The three total metals sampling events, submitted with the permit application, showed numerous metals being detected above quantification levels. Due to the results of these sampling events, totals metal sampling was requested of the influent, effluent, and of the water from the bio-augmentation tank that receives the Town of Orange's Water Treatment Plant (VA0052121) sludge. The results from this sample event were used to characterize the movement of metals within the plant, see **Attachment 15** for a summary of these results.

Limits are no longer required for Total Recoverable Copper and Total Recoverable Zinc, removal of these limits is in conformance with Section 402(o) of the Clean Water Act, 9VAC25-31-220.L.2., and 40 CFR 122.44 9 (see Section 18).

During the drafting of the previous permit, the facility was undergoing an expansive upgrade that included substantial alterations to the facility. At the time of the previous reissuance of this permit, there was not enough data to quantify the effect of the facility's upgrade on the amount of total dissolved Zinc and total dissolved Copper in the effluent. Therefore, removing the total recoverable Zinc and total recoverable Copper limits could not be justified at that time.

Monitoring once every six months for total dissolved Zinc and total dissolved Copper will be implemented in lieu of a limit.

Lead, Mercury and Nickel were evaluated and it was determined that no limits are necessary for these pollutants because a reasonable potential to exceed water quality standards has not been exhibited (**Attachment 16**).

Antimony does not have an aquatic life criterion. However, the human health criteria for Antimony (640 µg/L) exceeds the Antimony concentrations found in the effluent (0.17 µg/L, 0.26 µg/L, and 0.41 µg/L). Therefore, limits for Antimony are not warranted.

See **Attachment 16** for WLA and derivation of the metals limits.

d. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), total suspended solids (TSS), carbonaceous oxygen demand ($cBOD_5$), *E. coli*, and pH limitations are proposed.

The TKN limit is based on the WLA analysis for Ammonia (**Attachment 11**) and the dissolved oxygen model (**Attachment 14).**

Dissolved oxygen and $cBOD_5$ limitations are based on the stream modeling conducted in February 2016 (**Attachment 14**).

It is staff's practice to equate the total suspended solids limits with the $cBOD_5$ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9VAC25-260-170

e. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. Only concentration limits are now found in the individual VPDES permit when the facility installs nutrient removal

technology. The basis for the concentration limits is 9VAC25-40 – *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* which requires new or expanding discharges with design flows of ≥ 0.04 MGD to treat for TN and TP to either BNR (Biological Nutrient Removal) levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA (State of the Art) levels (TN = 3.0 mg/L and TP = 0.3 mg/L).

This facility has also obtained coverage under 9VAC25-820 – *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit and not this individual permit. This facility has coverage under this General Permit; the permit number is VAN020025. Total Nitrogen Annual Loads and Total Phosphorus Annual Loads from this facility are found in 9VAC25-720 – *Water Quality Management Plan Regulation* which sets forth TN and TP maximum wasteload allocations for facilities designated as significant discharges, i.e. those with design flows of ≥ 0.5 MGD above the fall line and > 0.1 MGD below the fall line.

Monitoring for nitrates + nitrites, total Kjeldahl nitrogen, total nitrogen, and total phosphorus are included in this permit. The monitoring is needed to protect the Chesapeake Bay Water Quality Standards. Monitoring frequencies are set at the frequencies as set forth in 9VAC25-820. Annual average effluent limitations, as well as monthly and year to date calculations, for total nitrogen and total phosphorus are included in this individual permit. The annual averages are based on 9VAC25-40 and GM07-2008.

f. Effluent Limitations and Monitoring Summary

The effluent limitations are presented in Section 19. Limits were established for carbonaceous oxygen demand-5 day ($cBOD_5$), total suspended solids (TSS), total Kjeldahl nitrogen (TKN), pH, dissolved oxygen (D.O.), total nitrogen (TN), and total phosphorus (TP).

The limit for total suspended solids is based on staff's professional judgment.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and then a conversion factor of 3.785.

The mass loading (lb/d) for TKN monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and then a conversion factor of 8.345.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual, with the exception of cBOD. During this permit reissuance, the permittee requested a reduction in sampling frequency for carbonaceous oxygen demand ($cBOD_5$) based on a history of compliance with the limit. In accordance with current agency guidance, five years worth of DMR data was reviewed. A ratio of the average concentration of $cBOD_5$ and the permitted limit indicate that the facility is eligible for three day per week sampling, contingent on the facility maintaining its record of compliance. See **Attachment 17** for a summary of the facility's $cBOD_5$ compliance history and the calculation of the ratio of the facility's actual performance to the permit limit.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for cBOD and TSS (or 65% for equivalent to secondary). The limits in this permit are water quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

In conformance with the anti-backsliding provisions of Section 402(o) of the Clean Water Act, 9VAC25-31-220.L.2., and 40 CFR 122.44, Total Recoverable Zinc and Total Recoverable Copper limits were removed and replaced with monitoring once every six months.

During the drafting of the previous permit, the facility was undergoing an expansive upgrade that included installing new treatment technology. At the time of the previous reissuance of this permit, there was not enough data to quantify the effect of the facility's upgrade on the amount of total dissolved Zinc and total dissolved Copper in the effluent. Therefore, removing the total recoverable Zinc and total recoverable Copper limits could not be justified.

During the drafting of this permit, an evaluation of the 2011-2016 Discharge Monitoring Reports indicates that there is no reasonable potential to cause or contribute to instream exceedances of water quality criteria for total recoverable Copper or total recoverable Zinc. The revisions to the limits are allowed, as there were substantial alterations to the facility, the revisions comply with the Water Quality Standards 402(o)(2) and they are consistent with antidegradation 303(d)(4)(B).

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19. Effluent Limitations/Monitoring Requirements

a. Municipal Outfall 001:

Design flow is 3.0 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
pH	1	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
$cBOD_5$ [a.]	1,4	10 mg/L 110 kg/day	15 mg/L 170 kg/day	NA	NA	3D/W [g.]	24H-C
Total Suspended Solids (TSS) [a. b.]	2	10 mg/L 110 kg/day	15 mg/L 170 kg/day	NA	NA	5D/W	24H-C
Dissolved Oxygen (DO)	1,4	NA	NA	6.0 mg/L	NA	1/D	Grab
E. coli (Geometric Mean) [c.]	1,6	126 n/100 mL	NA	NA	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	1,4	3.0 mg/L 75 lb/day	4.5 mg/L 110 lb/day	NA	NA	5D/W	24H-C
Nitrate+Nitrite, as N	1,5	NL mg/L	NA	NA	NA	1/W	24H-C
Total Nitrogen [d. e.]	1,5	NL mg/L	NA	NA	NA	1/W	Calculated
Total Nitrogen – Year to Date [d. e.]	1,5	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen – Calendar Year [d. e.]	1,5	4.0 mg/L	NA	NA	NA	1/YR	Calculated
Total Phosphorus	1,5	NL mg/L	NA	NA	NA	1/W	24H-C
Total Phosphorus – Year to Date [e.]	1,5	NL mg/L	NA	NA	NA	1/M	Calculated
Total Phosphorus – Calendar Year [e.]	1,5	0.3 mg/L	NA	NA	NA	1/YR	Calculated
Zinc, Total Dissolved	1	NL µg/L	NL µg/L	NA	NA	1/6M	Grab
Copper, Total Dissolved	1	NL µg/L	NL µg/L	NA	NA	1/6M	Grab
Total Hardness (as $CaCO_3$)	2	NL mg/L	NL mg/L	NA	NA	1/6M	Grab
Chronic Toxicity – *C. dubia* [f.]	1,7	NA	NA	NA	NL	1/YR	24H-C
Chronic Toxicity – *P. promelas* [f.]	1,7	NA	NA	NA	NL	1/YR	24H-C

The basis for the limitations codes are:

1. Water Quality Standards
2. Professional Judgment
3. DEQ Disinfection Guidance
4. Stream Model – **Attachment 14**
5. 9VAC25-40 (Nutrient Regulation)
6. Rapidan River Bacteria TMDL
7. Toxics Management Program Implementation Guidance (GM No. 00-2012)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.
3D/W = Three days a week.
5D/W = Five days a week.
1/M = Once every month.
1/Q = Once every quarter.
1/6M = Once every six months.
1/YR = Once every calendar year.

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15 minutes.

a. At least 85% removal for $cBOD_5$ and TSS shall be obtained.

b. TSS shall be monitored to two significant digits.

c. Samples shall be collected between 10:00 a.m. and 4:00 p.m.

d. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

e. See Section 20.a for nutrient reporting requirements.

f. See Section 20.c. for WET testing requirements.

g. See Section 21.m. for Effluent Monitoring Frequency special condition.

b. Stormwater Outfalls 001- 009:

Effective Dates: During the period beginning with effective date of the permit and lasting until the expiration date.

The facility is authorized to discharge non-contaminated storm water through Stormwater Outfalls 001-009.
No monitoring of effluent limitations are proposed for these outfalls.
There shall be no discharge of floating solids or visible foam in other than trace amounts.
There shall be no discharge of process wastewater through these outfalls.

20. Other Permit Requirements:

a. Permit Section Part I.B. contains Additional Quantification Levels and Compliance Reporting Instructions
The calculations for the nitrogen and phosphorus parameters shall be in accordance with the calculations set forth in 9VAC25-820 – *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9VAC25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits**.**

b. Permit Section Part I.C. contains Pretreatment Requirements
The VPDES Permit Regulation at 9VAC25-31-210 requires monitoring and 9VAC25-31-220.D. requires that all discharges protect water quality. The VPDES Permit Regulation at 9VAC25-31-730. through 900., and 40 CFR Part 403 requires POTWs with a design flow of >5 MGD and receiving from Industrial Users (IUs) pollutants which pass through or interfere with the operation of the POTW or are otherwise subject to pretreatment standards to develop a pretreatment program. Program requirements and reporting are found in this section of the permit.

Sludge from the Town of Orange's Water Treatment Plant is received at the facility's bio-augmentation tank. Additionally, plant drains, filter backwash, filtrate from the belt filter press, and decant from aerobic sludge digesters are received at this location. The permittee shall complete an annual screening of metals from the stream of effluent from the bio-augmentation tank that is returned to the plant.

The Town of Orange Wastewater Treatment Plant has an inactive pretreatment program with no SIUs. Until such time any Significant Industrial User permit is issued by the facility, the pretreatment program requirements stated in the permit are deferred.

c. Permit Section Part I.D. Details the Requirements for Whole Effluent Toxicity Program
Whole Effluent Toxicity (WET) refers to the aggregate toxic effect to aquatic organisms from all pollutants present within a facility's wastewater effluent. This program is one approach to comply with the Clean Water Act's prohibition of the discharge of toxic pollutants in toxic amounts. WET testing allows for the measurement of the wastewater's potential effects on specific test organism's ability to survive, grow and reproduce.

The VPDES Permit Regulation at 9VAC25-31-220.D.1.a-d. requires limitations in permits to provide for and ensure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. Limitations must control all pollutants or pollutant parameters which the Board determines are or may be discharged at a level which will cause, have the reasonable potential to cause or contribute to an excursion above any Virginia water quality standard, including narrative criteria. The determination whether a discharge causes or contributes to an instream excursion above a narrative or numeric criteria shall utilize procedures which account for existing controls on sources of pollution, variability of the pollutant, species sensitivity and dilution of the effluent in the receiving stream. If it is determined that a reasonable potential exists to cause or contribute to an instream excursion of narrative criterion of the water quality standard, the permit must contain effluent limits for whole effluent toxicity. However, limits may not be necessary when it is demonstrated that chemical-specific limits are sufficient to attain and maintain applicable numeric and narrative water quality standards.

A WET Program is imposed for municipal facilities with a design rate >1.0 MGD, all facilities with an approved pretreatment program or required to develop a pretreatment program and/or those required by the Board based on effluent variability, compliance history, instream waste concentration (IWC), existing pollutant controls and/or receiving stream characteristics. The design flow of this facility is 3.0 MGD; thus, meeting the criteria for this program.

As referenced above, reasonable potential determinations must take into account the variability of the pollutant or pollutant

parameter in the effluent, sensitivity of the species to toxicity testing and, as appropriate, the dilution of the effluent in the receiving stream. This warrants a sampling regime that rotates throughout a given calendar year; a quarterly schedule in order to obtain seasonal perspectives that encompass that potential variableness listed prior. This methodology coincides with the VPDES Permit Regulation requirements that facilities submit representative data that reflects the seasonal variation in the discharge with each permit application (9VAC25-31-100.K.4.g.). Therefore, it is staff's best professional judgement that a WET testing protocol be proposed with this permit action that requires a rotating, quarterly testing regime for each annual monitoring requirement. The schedule as set forth within Part I.D. of the permit will ensure that the discharge is monitored for whole effluent toxicity and demonstrates seasonal variations.

See **Attachment 18** for a summary of the past test results.

21. Other Special Conditions:

a. 95% Capacity Reopener. The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.

b. Indirect Dischargers. Required by VPDES Permit Regulation, 9VAC25-31-200.B.1 and B.2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

c. O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

d. CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct (CTC) prior to commencing construction and to obtain a Certificate to Operate (CTO) prior to commencing operation of the treatment works.

e. Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200.C., and by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class I operator.

f. Reliability Class. The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a Reliability Class of I.

g. Water Quality Criteria Reopener. The VPDES Permit Regulation at 9VAC25-31-220.D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

h. Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-220.C. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.

i. Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720 and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.

j. E3/E4. 9VAC25-40-70.B. authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated

into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

k. Nutrient Reopener. 9VAC25-40-70.A. authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390.A. authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

l. Polychlorinated biphenyl (PCB) Pollutant Minimization Plan. This special condition requires the permittee, upon notification from DEQ-NRO, to submit a Pollutant Minimization Plan (PMP) to identify known and unknown sources of low-level PCBs in the effluent. This special condition details the contents of the PMP and also requires an annual report on progress to identify sources.

m. Effluent Monitoring Frequency. Permittees are granted a reduction in monitoring frequency based on a history of permit compliance. To remain eligible for the reduction, the permittee should not have violations related to the effluent limits for which reduced frequencies were granted. If permittees fail to maintain the previous level of performance, the baseline monitoring frequencies should be reinstated for those parameters that were previously granted a monitoring frequency reduction.

n. Total Maximum Daily Load (TMDL) Reopener. Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan or other wasteload allocation prepared under section 303 of the Act.

22. Permit Section Part II.

Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a. Special Conditions:

- Water Quality Criteria Reopener, Polychlorinated biphenyl (PCB) Pollutant Minimization Plan and Effluent Monitoring Frequency special conditions were added.
- PCB Monitoring special condition was removed.

b. Monitoring and Effluent Limitations:

- In order to be protective of the ammonia of water quality criteria, a TKN limit of 3.0 mg/L is included with this reissuance.
- Copper and zinc limits were removed and replaced with monitoring once every six months.
- TRC limits were removed.
- Section 19b. Storm Water Outfalls 001 - 009 was added.

24. Variances/Alternate Limits or Conditions:

None.

25. Public Notice Information:

First Public Notice Date: June 30, 2016 Second Public Notice Date: July 7, 2016

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected and copied by contacting the: DEQ Northern Regional Office; 13901 Crown Court; Woodbridge, VA 22193; Telephone No. 703-583-3859, caitlin.shipman@deq.virginia.gov. See **Attachment 19** for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

27. Additional Comments:

Previous Board Action(s):	The Town of Orange was issued a Consent Order, effective December 12, 2005. This order was issued due to exceedance of effluent limits for Total Copper and pH, late submission of a schedule of compliance the Total Copper limits and submitting a late annual I&I report. This order was terminated November 13, 2011.
Staff Comments:	None.
State/Federal Agency Comments:	VDH has no objects to this permits reissuance, a Reliability Class II was recommended for this facility, the permit requires a Reliability Class I. DCR noted the presence of the Yellow lance *(Elliptio lanceolata)* and the Green floater *(Lasmigona subviridis)*. DCR supports the use of UV/ozone disinfection to replace chlorination. This facility currently implements UV disinfection. See **Attachment 20** for DCR's complete comment. VaFWS had no objections to the facility. FWS recommends adopting the EPA's new ammonia criteria. This criterion may be implemented into VPDES permits once it has been adopted into the Virginia Water Quality Standards. No comments have been received from VDGIF.
Public Comments:	No comments were received.
Owner Comments:	None.

Town of Orange Wastewater Treatment Plant (VA0021385)
Fact Sheet Attachments:

Attachment 1 – Flow Frequency Determination for Rapidan River

Attachment 2 – Certificate to Operate

Attachment 3 – Termination Letter for General Permit for Storm Water Discharges Associated with Industrial Activity (VAR051419)

Attachment 4 – Facility Schematic/Diagram

Attachment 5 – Topographic Map for Madison Mills, DEQ #185C

Attachment 6 – Site Inspection Report

Attachment 7 – Planning Statement

Attachment 8 – Freshwater Water Quality/Wasteload Allocation Analysis (MSTRANTI Spreadsheet)

Attachment 9 – Ambient Water Quality Data for Waterbody VAN-E13R

Attachment 10 – Effluent pH Data Calculations

Attachment 11 – Limit Derivations for Ammonia (STATS)

Attachment 12 – Summary of Effluent Data

Attachment 13 – Mixing Analysis for High and Low Flows

Attachment 14 – Dissolved Oxygen Model

Attachment 15 – Summary of Influent, Effluent, and Digester Decant Metals Testing

Attachment 16 – Limit Derivations for Metals (STATS)

Attachment 17 – Compliance History Analysis for $cBOD_5$ Limit

Attachment 18 – Summary of Whole Effluent Testing Results

Attachment 19 – Public Notice

Attachment 20 – Comments from Virginia Department of Recreation and Conservation (DCR)

Attachment 1 – Flow Frequency Determination for Rapidan River

Flows at Gauging Station 01665500 -- Rapidan River near Ruckersville, VA
Revised February 10, 2011

Flow Value	CFS	MGD
1Q30	1.4	0.904820
1Q10	3.1	2.003530
HF1Q10	17	10.987100
7Q10	4	2.585200
HF7Q10	21	13.572300
30Q10	7	4.524100
HF30Q10	29	18.742700
Harmonic Mean	44	28.437200
30Q5	10	6.463000

Flow Value CFS MGD cfs x 0.6463 = MGD

High Flow Months are December through June

Period Used to Determine 1Q10, 7Q10, 30Q10 Flows: 1942-1995, 1999-2006
Period Used to Determine Other Flows: 1942-1995, 1999-2003
Drainage Area at the Gauging Station = 114 mi^2

This continuous record gauge has been in operation since 1942. It is approximately 16.0 miles upstream of the Outfall 001 discharge point.

Drainage Area at the Rapidan River Outfall 001 Discharge Point = 233 mi^2
The flow values for the discharge point in the table below are determined by drainage area discharges, or springs are not addressed.
(DA Outfall/DA Gauge)Q at Gauge = Flow at Outfall

Flow Value	MGD
1Q30	1.849325
1Q10	4.094934
HF1Q10	22.456090
7Q10	5.283786
HF7Q10	27.739876
30Q10	9.246625
HF30Q10	38.307448
Harmonic Mean	58.121646
30Q5	13.209465

The withdrawal for the Town of Orange WTP is directly upstream of Outfall 001. In order to obtain accurate flow data, the volume of water withdrawn from the Rapidan River by the WTP must be subtracted from the flow frequencies calculated at the discharge point.

The following are flows at the Outfall 001 Discharge Point after subtracting the maximum volume (2.6 MGD) of the Town of Orange WTP withdrawal allowed per DEQ VWP Permit No. 02-1835.

Flow Value	MGD
1Q30	-0.750675
1Q10	1.494934
HF1Q10	19.856090
7Q10	2.683786
HF7Q10	25.139876
30Q10	6.646625
HF30Q10	35.707448
Harmonic Mean	55.521646
30Q5	10.609465

Attachment 2 – Certificate to Operate

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

June 8, 2011

Orange County
Town of Orange STP
VA 0021385

Mr. Gregory Woods, Interim Town Manager
Town of Orange
119 Belleview Avenue
Orange, VA 22960

Dear Mr. Woods:

Enclosed is the Certificate to Operate (CTO) for the above mentioned facility. This action is in accordance with the Virginia *Sewage Collection and Treatment Regulations.*

If you have any questions regarding the CTO, please feel free to contact this office.

Sincerely,

J. S. Desai, P. E.
CBP/Wastewater Engineering
Northern Regional Office

COMMONWEALTH of VIRGINIA

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Thomas A. Faha
Regional Director

CERTIFICATE TO OPERATE

Owner: Town of Orange

Facility/System Name: Town of Orange Sewage Treatment Plant

VPDES Permit Number: VA0021385

Description of the Facility/System:

The project consists of installation of screening, influent pump station, grit removal, four-stage "Bardenpho" activated sludge nutrient removal process, secondary clarifiers, Return Activated Sludge pumps, cloth media disk filters, Ultraviolet disinfection, flow measurement, cascade type post aeration aerobic sludge digestion, and belt filter press. Plant drain, filter backwash from filters, filtrate from the belt filter press, decant from aerobic sludge digesters and sludge from Town's Water Treatment Plant will all be delivered to a bioaugementation/process sidestream facility, where the existing primary clarifiers have been retrofitted for this purpose. Transfer pumps will convey this sidestream to the main activated sludge process. Chemicals added will be alum for phosphorus removal, methanol for denitrification, magnesium hydroxide for pH control and polymer for sludge conditioning.

The project is designed to comply with average monthly effluent limits of 10 mg/l cBOD5; 10 mg/l TSS; 7 mg/l

TKN; pH range of 6.0-9.0 S.U.; 126 n/100 ml E coli (geometric mean); and a minimum DO of 6.0 mg/l. Additionally, the project is designed to meet an annual average total nitrogen concentration of 4.0 mg/l and an annual average total phosphorus concentration of 0.3 mg/l.

Authorization to Operate: The owner's consulting engineer has certified in writing by letter dated May 12, 2011 that the installation has been constructed as per the approved plans and specifications. Therefore, the owner has authorization to operate the 3.0 MGD facility.

ISSUANCE:

J. S. Desai, P. E.,
DEQ-CBP/Wastewater Engineering

Date: June 8, 2011

Attachment 3 – Termination Letter for General Permit for Storm Water Discharges Associated with Industrial Activity (VAR051419)

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

April 24, 2014

Mr. Gregory S. Woods
Town Manager
Town of Orange
119 Belleview Avenue
Orange, VA 22960

Re: Termination of Virginia Pollutant Discharge Elimination System (VPDES) General Permit for Storm Water Discharges Associated with Industrial Activity – VAR051419

Dear Mr. Woods

Based on a site review conducted March 13, 2014, the Department of Environmental Quality - Northern Regional Office has approved a no-exposure certification request received on March 19, 2014, for the Town of Orange Wastewater Treatment Plant. Pursuant to 9VAC25-151-50 C, an owner covered by the VPDES General Permit for Storm Water Discharges Associated with Industrial Activity who is later able to file a no-exposure certification to be excluded from permitting is no longer authorized by nor required to comply with this permit. Additionally, if the owner is no longer required to have permit coverage due to a no-exposure exclusion, the owner is not required to submit a notice of termination. As such, the Department of Environmental Quality has approved the termination of the Permit referenced above. Termination of this permit does not prohibit the discharge of storm water from the Town of Orange Wastewater Treatment Plant. Additionally, termination of this permit does not change or alter terms and conditions of the facility's individual permit nor does this termination relieve the facility from complying with the individual permit (VA0021385). Termination of this permit is effective thirty days from the date of this notification (May 24, 2014) unless you provide an objection in accordance with one of the two paragraphs below.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have thirty days from the date you received this decision within which to appeal this decision by filing a notice of appeal in accordance with the Rules of the Supreme Court of Virginia with the Director, Virginia Department of Environmental Quality.

Alternatively, any owner under §§ 62.1-44.16, 62.1-44.17 and 62.1-44.19 of the State Water Control Law aggrieved by any action of the State Water Control Board taken without a formal hearing, or by inaction of the Board, may demand in writing a formal hearing of such owner's grievance, provided a petition requesting such hearing is filed with the Board. Said agreement must meet the requirements set forth in §1.23 (b) of the Board's Procedural Rule No. 1.

Please note that should a discharge arise in accordance with 9VAC25-31-100, Application for a Permit, Town of Orange Wastewater Treatment Plant shall be responsible for complying with Virginia State Water Control Laws and Regulations. Additionally, coverage may be necessary at a later date should changes to regulations be implemented or site activities change.

Should you have any questions or need any additional information, please contact Susan Mackert at (703) 583-3853 or by email at susan.mackert@deq.virginia.gov.

Sincerely,

Bryant Thomas
Water Permits and Planning Manager

Enc: Site memorandum

cc: File – VAR051419
Lisa Janovsky – DEQ Compliance Inspector (without enclosure)
Becky Vice – DEQ Compliance Auditor (without enclosure)
Michelle Steinberger – Town of Orange Wastewater Treatment Plant (with enclosure) - (ams@townoforangeva.org)

MEMORANDUM

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court Woodbridge, VA 22193

SUBJECT: Town of Orange Wastewater Treatment Plant (VAR051419)

TO: File

FROM: Susan Mackert

DATE: April 21, 2014

COPIES: Mr. Gregory S. Woods – Town Manager
Ms. Michelle Steinberger – Town of Orange Wastewater Treatment Plant

A site visit was performed on March 13, 2014, to assess drainage patterns, point source discharge locations, and permit applicability for the referenced facility. Additionally, a no-exposure certification was received on March 19, 2014.

General Site Observations

- The facility operates under SIC Code 4952 (wastewater treatment) which falls under Sector T – Treatment Works of the Virginia Pollutant Discharge Elimination System (VPDES) General Permit for Storm Water Discharges Associated with Industrial Activity (SWGP).
- The facility has a design flow of 3 MGD.
- The facility comprises approximately 40 acres with paved and grass surfaces and consists of an office/laboratory building and typical wastewater treatment process units.
- The facility has nine storm water outfalls.
    - One outfall is located near the main gate (photo 1). This outfall receives storm water runoff from the "old" portion of the plant (photos 2 – 3). No treatment process units are located within the drainage area which consists primarily of paved and grassy surfaces. This outfall was in place prior to an extensive upgrade and expansion in 2010. This outfall discharges to an unnamed tributary to Poplar Run.
    - Three outfalls are located at the bottom of the plant area. These outfalls receive storm water runoff from the "old" portion of the plant (photos 4 – 5). No treatment process units are located within the drainage area which consists primarily of grassy surfaces. These outfalls were in place prior to an extensive upgrade and expansion in 2010. Two of these outfalls discharge to Poplar Run with one discharging to Laurel Run.
    - Five outfalls were added as a result of the upgrade and expansion in 2010. All outfalls receive storm water runoff from the treatment process area which consists of primarily paved and grassy surfaces (photos 6 – 11). These outfalls discharge to Laurel Run.
- Areas of potential storm water contamination include the grit facility (photo 12) and filter press building/truck port (photo 13). Storm water from all of these areas is directed to the headworks. As such, there is no reasonable potential for these areas to impact storm water quality.

Staff Recommendations

The requirements found within 9VAC25-151 are applicable to point source storm water discharges associated with industrial activity. Based on observations made during the site visit, it is staff's best professional judgement that there is no reasonable potential for the industrial activity at the Town of Orange Wastewater Treatment Plant to impact storm water quality. Storm water discharges are comprised primarily of runoff from paved and grassy areas. Discharges such as this are currently exempt from coverage under the general industrial storm water permit. Any areas of potential storm water contamination are directed to the headworks thereby not impacting storm water quality.

The facility maintains coverage under the VPDES General Permit for Storm Water Discharges Associated with Industrial Activity (VAR0514219). Pursuant to 9VAC25-151-50 C, an owner covered by the VPDES General Permit for Storm Water Discharges Associated with Industrial Activity who is later able to file a no-exposure certification to be excluded from permitting is no longer authorized by nor required to comply with this permit. Additionally, if the owner is no longer required to have permit coverage due to a no-exposure exclusion, the owner is not required to submit a notice of termination. Please note that if a discharge arises in accordance with 9VAC25-31-100, Application for a Permit, the Town of Orange Wastewater Treatment Plant shall be responsible for complying with Virginia State Water Control Law and Regulations. Additionally, coverage may be necessary at a later date should changes to regulations be implemented or site activities change.

Photo 1. Storm water outfall near main gate.

Photo 2. Drainage area to outfall shown in Photo 1. Flow is in the direction of the arrow through the structure in Photo 3 which carries it under the entrance road for discharge via the outfall in photo 1.

Photo 3. Structure which carries storm water flow under the entrance road for discharge via the outfall in Photo 1.

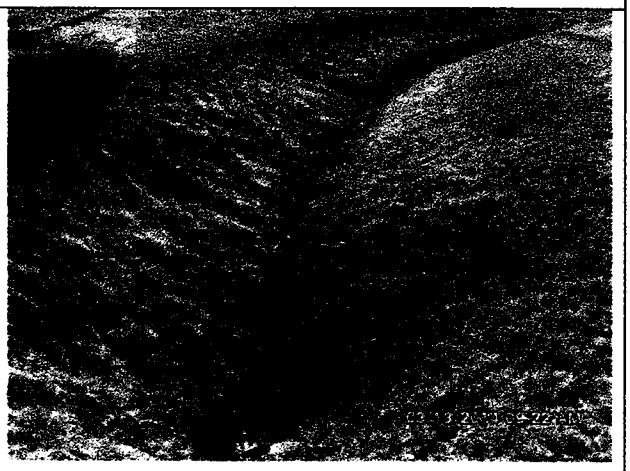


Photo 4. Portion of "old" plant area that has three associated storm water outfalls.

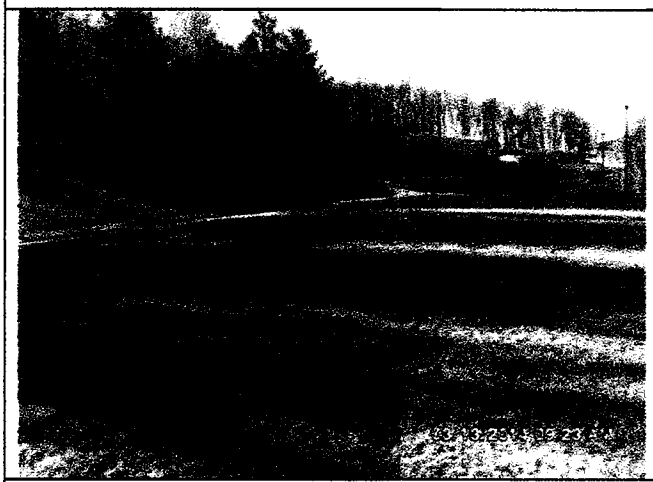


Photo 5. Portion of "old" plant area that has three associated storm water outfalls.

Photo 6. Portion of "new" plant area that has five associated storm water outfalls.

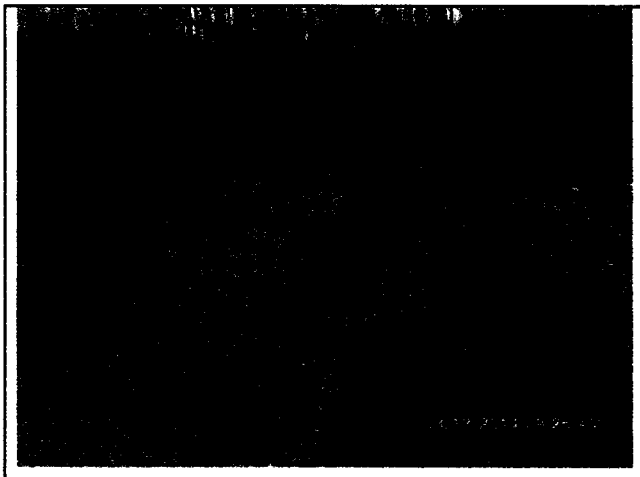


Photo 7. Portion of "new" plant area that has five associated storm water outfalls.

Photo 8. Portion of "new" plant area that has five associated storm water outfalls.

Photo 9. Portion of "new" plant area that has five associated storm water outfalls.

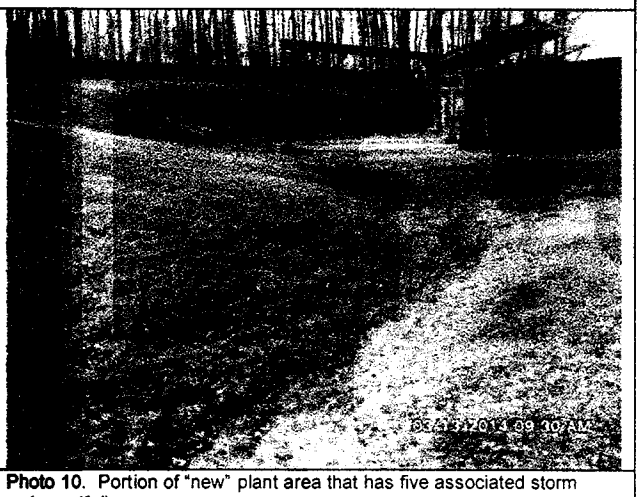


Photo 10. Portion of "new" plant area that has five associated storm water outfalls.

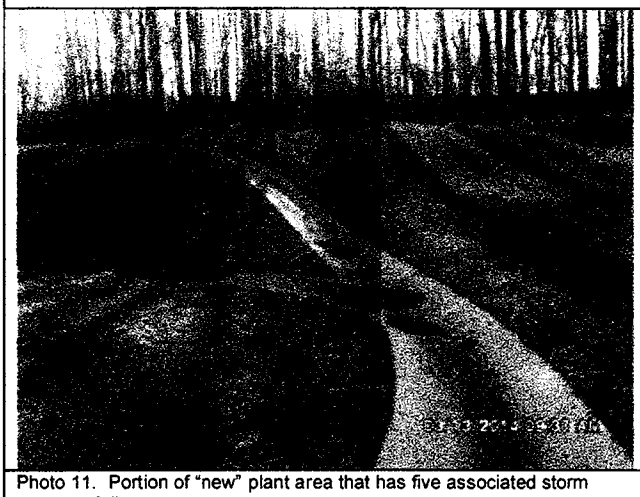


Photo 11. Portion of "new" plant area that has five associated storm water outfalls.

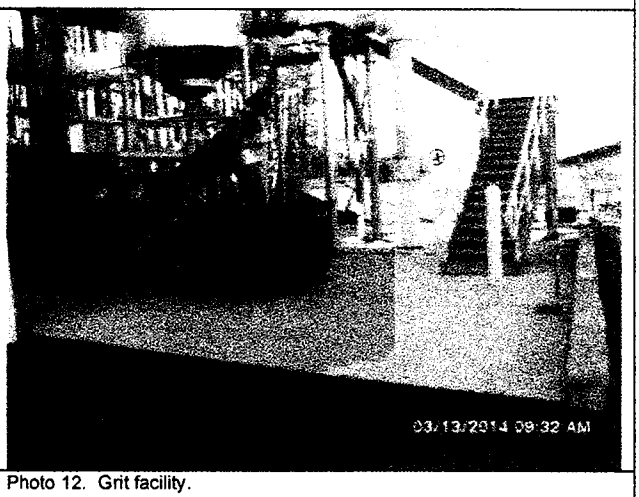
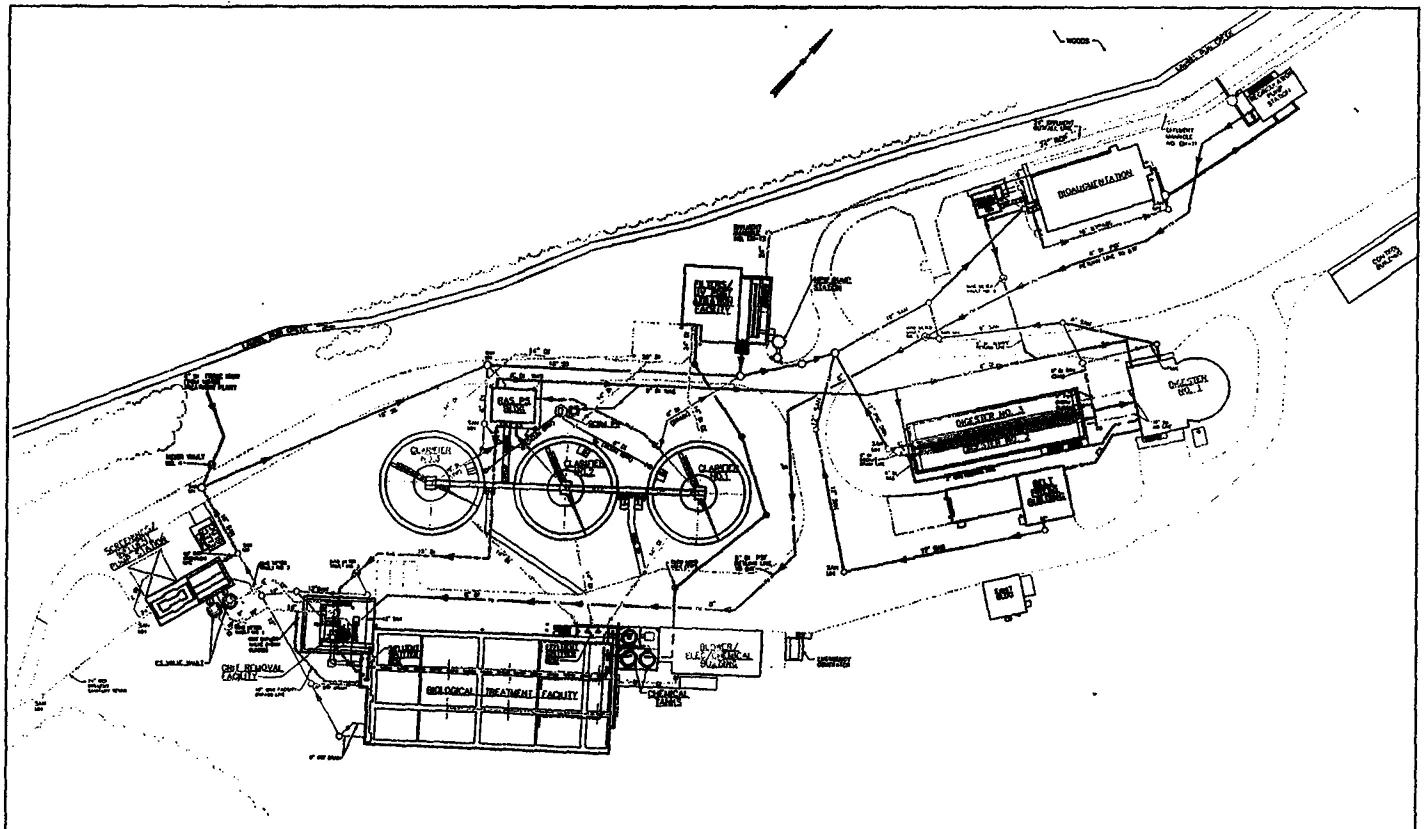


Photo 12. Grit facility.

Photo 13. Filter press building/truck port.

Attachment 4 – Facility Schematic/Diagram



REV.	DATE	BY	APP.	DESCRIPTION

ORANGE VIRGINIA

Wiley & Wilson
Employee-Owned
2310 Langhorne Road
Lynchburg, VA 24501-1847

HOLE MONTES

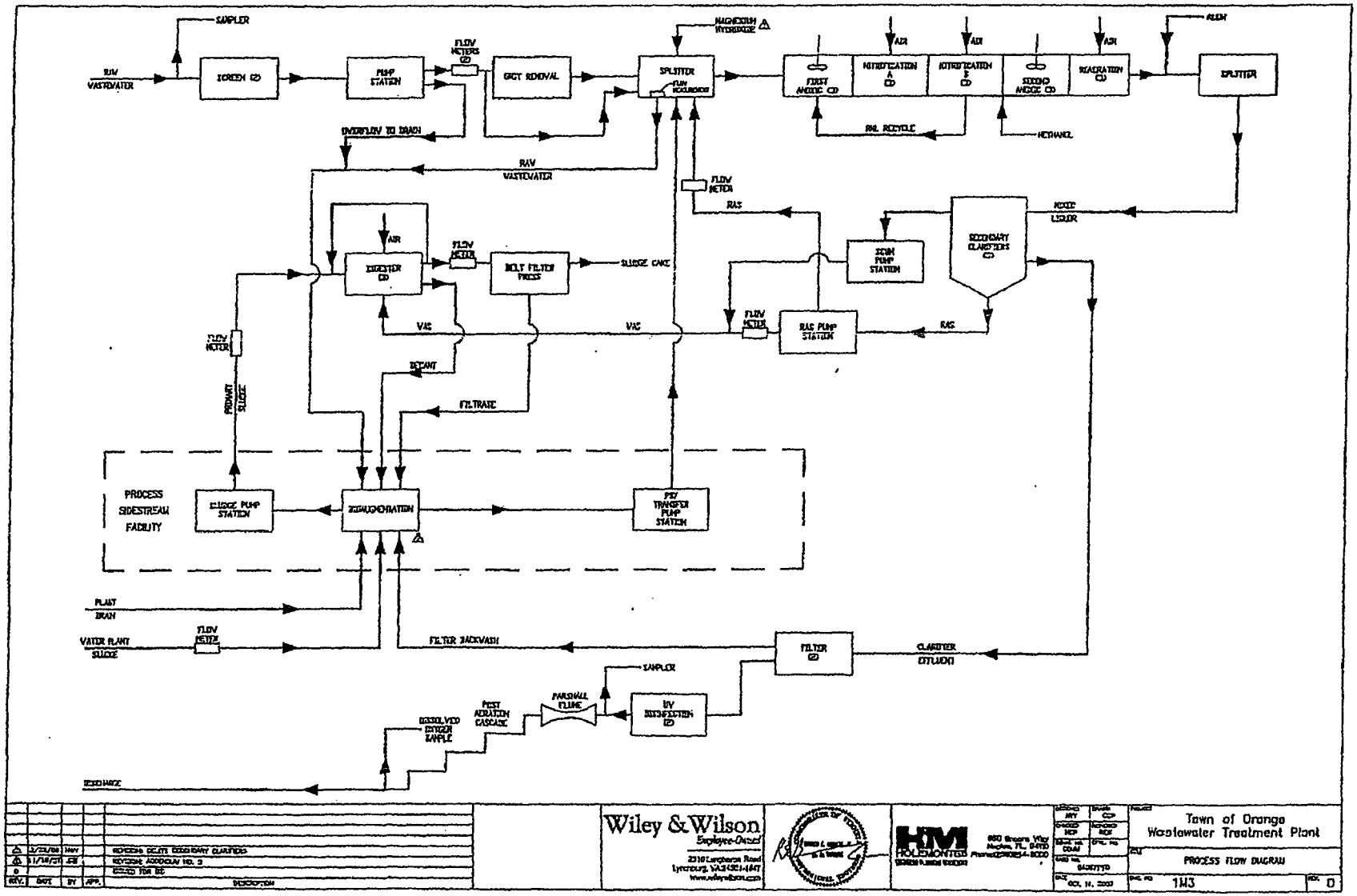
Town of Orange
Wastewater Treatment Plant

SITE PLAN
PROCESS PIPING

DECEMBER 2010

X

0



REV.	DATE	BY	APP.	DESCRIPTION
1	3/30/06	HWY		REVISIONS PER SECONDARY CLARIFIERS
1	11/16/01	JEB		REVISIONS ADDENDUM NO. 2
0				ISSUED FOR BID

Wiley & Wilson
Employee-Owned
2301 Langhorne Road
Lynchburg, VA 24501-1447
www.wileyWilson.com

HMI HOLDSWORTH

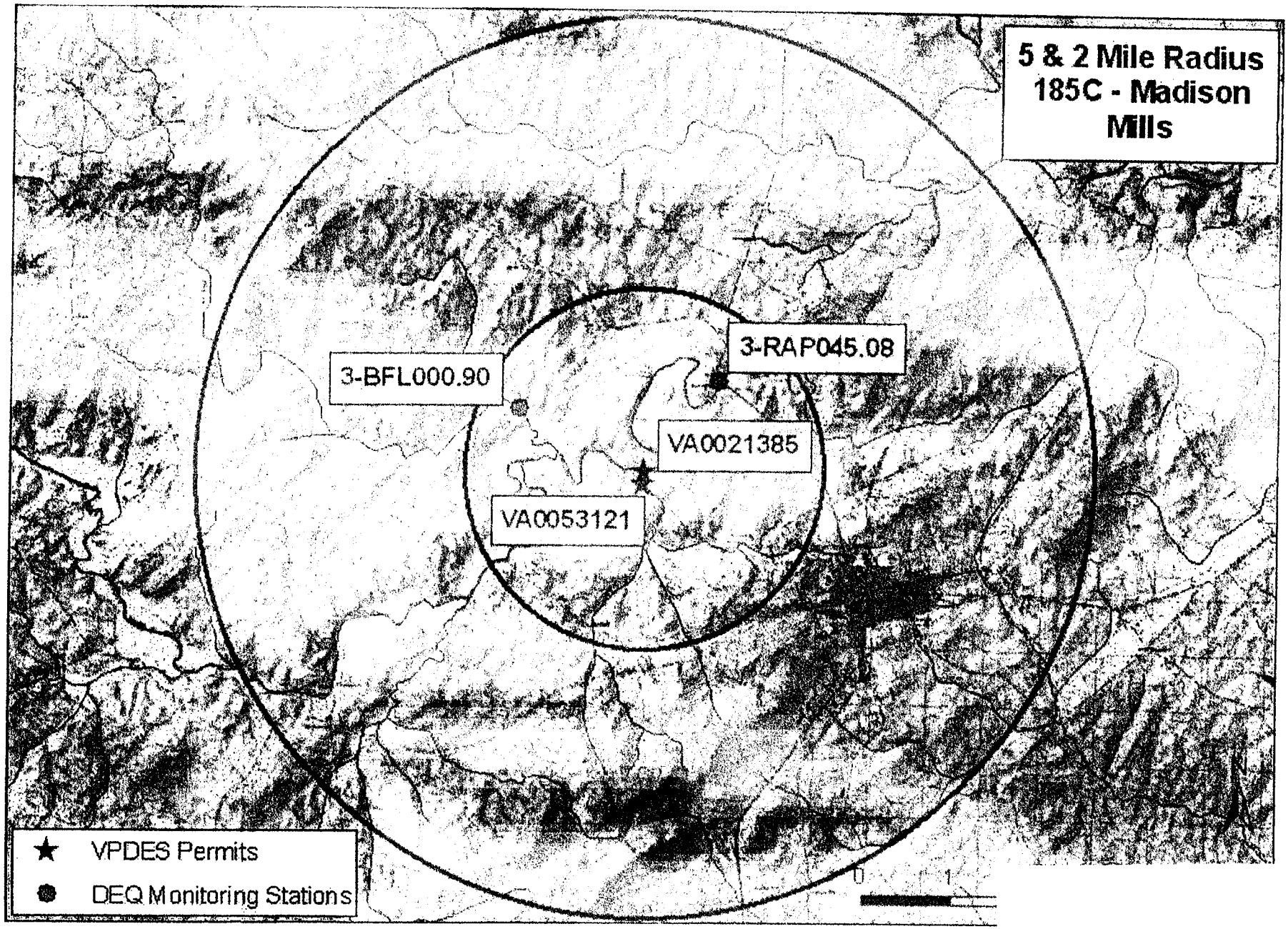
DESIGNED	DRAWN
CHECKED	ACCEPTED
SUBMITTED	
DATE	DWG. NO.

Town of Orange
Wastewater Treatment Plant

PROCESS FLOW DIAGRAM

DWG. NO. 1W3 REV. 0

Attachment 5 – Topographic Map for Madison Mills, DEQ #185C


5 & 2 Mile Radius
185C - Madison Mills
3-RAP045.08
3-BFL000.90
VA0021385
VA0053121
VPDES Permits
DEQ Monitoring Stations
0
1

Attachment 6 – Site Inspection Report

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

December 1, 2015

Mr. Gregory Woods
Town Manager
Town of Orange
119 Belleview Avenue
Orange, VA 22960

Re: Town of Orange Wastewater Treatment Plant, Permit: VA0021385

Dear Mr. Woods:

Attached is a copy of the Inspection Report generated from the Technical Inspection conducted at the Town of Orange - Wastewater Treatment Plant (WWTP) on October 30, 2015. This letter is not intended as a case decision under the Virginia Administrative Process Act, VA Code §2.2-4000 *et seq.* (APA). The DEQ-NRO staff would like to thank Ms. Michelle Steinberger and Mr. Jesse Redmon for their assistance during the inspection.

No response is required for this report. If you choose to respond, your response may be sent either via the US Postal Service or electronically, via E – mail. DEQ recommends sending electronic responses as an Acrobat PDF or in a Word-compatible, write-protected format. Additional inspections may be conducted to confirm that the facility is in compliance with permit requirements.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at 703-583-3851 or martin.robinson@deq.virginia.gov.

Respectfully,

Martin S. Robinson, Jr.
Environmental Specialist II

Electronic copy sent:
Permits/DMR File, Compliance Manager, Compliance Auditor – DEQ

DEQ
WASTEWATER FACILITY INSPECTION REPORT

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
VA0021385	**08/08/2011**		**08/01/2016**

Facility Name	Address	Telephone Number
Town of Orange Wastewater Treatment Plant (WWTP)	**13222 Spicer's Mill Road Orange, VA 22960**	**540 – 672 – 3112**
Owner Name	Address	Telephone Number
Town of Orange	**119 Belleview Avenue Orange, VA 22960**	**540 – 672 – 5005**
Responsible Official	Title	Telephone Number
Gregory Woods	**Town Manager**	**540 – 672 – 5005**
Responsible Operator	Operator Cert. Class/number	Telephone Number
Michelle Steinberger	**Class I / 1965006714**	**540 – 672 – 3112**

TYPE OF FACILITY:

DOMESTIC				INDUSTRIAL			
Federal		Major	X	Major		Primary	
Non-federal	X	Minor		Minor		Secondary	

INFLUENT CHARACTERISTICS:		DESIGN:	
[redacted]	Flow	**3.0 MGD**	[redacted]
	Population Served	**~ 4, 855**	

EFFLUENT LIMITS: **OUTFALL 001** (All units are in mg/L unless otherwise specific)

Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow		**NL**	**NL**	***E. coli***		**126 n/100mL**	
pH (S.U.)	**6.0**		**9.0**	**TRC (May – Sep)**		**0.010**	0.012
CBOD5		**10**	**15**	**Nitrate+Nitrite, as N**		**NL**	
Total Suspended Solids		**10**	**15**	**Total Phosphorus Total Nitrogen**		**NL**	
Dissolved Oxygen	**6.0**			**Total Copper (µg/L)**		**9.6**	**9.6**
TKN		**7.0**	**11**	**Total Zinc (µg/L)**		**87**	**87**

[redacted]	Receiving Stream	**Rapidan River**	[redacted]
	Basin	**Rappahannock River**	
	Discharge Point (LONG)	**78° 09' 20.9" W**	
	Discharge Point (LAT)	**38° 15' 55.9" N**	

Virginia Department of Environmental Quality
FOCUSED CEI TECH/LAB INSPECTION REPORT

FACILITY NAME: Town of Orange WWTP		**INSPECTION DATE:**	**10/30/2015**
		INSPECTOR	**Martin S. Robinson**
PERMIT No.: VA0021385		**REPORT DATE:**	**11/19/2015**
TYPE OF FACILITY: ☑ Municipal ☑ Major; ☐ Industrial ☐ Minor; ☐ Federal ☐ Small Minor; ☐ HP ☑ LP		**TIME OF INSPECTION:**	Arrival 1150 / Departure 1300
		TOTAL TIME SPENT (including prep & travel)	**15hrs.**
PHOTOGRAPHS: ☑ Yes ☐ No		**UNANNOUNCED INSPECTION?**	☑ Yes ☐ No
REVIEWED BY / Date: Earl L. Stafford 11/30/15			
PRESENT DURING INSPECTION:	**Michelle Steinberger, Jesse Redmon**		

TECHNICAL INSPECTION

1. Has there been any new construction? • If so, were plans and specifications approved? Comments:	☐ Yes ☑ No
2. Is the Operations and Maintenance Manual approved and up-to-date? Comments:	☑ Yes ☐ No
3. Are the Permit and/or Operation and Maintenance Manual specified licensed operator being met? Comments:	☑ Yes ☐ No
4. Are the Permit and/or Operation and Maintenance Manual specified operator staffing requirements being met? Comments: **3 – Class I, 1 – Class II, 1 – Class III, 1 – Class IV and 2 – trainees**	☑ Yes ☐ No
5. Is there an established and adequate program for training personnel? Comments:	☑ Yes ☐ No
6. Are preventive maintenance task schedules being met? Comments:	☑ Yes ☐ No
7. Does the plant experience any organic or hydraulic overloading? Comments:	☐ Yes ☑ No
8. Have there been any bypassing or overflows since the last inspection? Comments:	☐ Yes ☑ No
9. Is the standby generator (including power transfer switch) operational and exercised regularly? Comments:	☑ Yes ☐ No
10. Is the plant alarm system operational and tested regularly? Comments:	☑ Yes ☐ No

VA DEQ Focused CEI Tech/Lab Inspection Report

Permit #	VA0021385

TECHNICAL INSPECTION

11. Is sludge disposed of in accordance with the approved sludge management plan? Comments:	☑ Yes ☐ No
12. Is septage received? • If so, is septage loading controlled, and are appropriate records maintained? Comments:	☑ Yes ☐ No
13. Are all plant records (operational logs, equipment maintenance, industrial waste contributors, sampling and testing) available for review and are records adequate? Comments:	☑ Yes ☐ No

14. Which of the following records does the plant maintain?

☑ Operational logs ☑ Instrument maintenance & calibration

☑ Mechanical equipment maintenance ☑ Industrial Waste Contribution (Municipal facilities)

Comments:

15. What does the operational log contain?

☑ Visual observations ☑ Flow Measurement ☑ Laboratory results ☑ Process adjustments

☑ Control calculations ☐ Other (specify) _____

Comments:

16. What do the mechanical equipment records contain?

☑ As built plans and specs ☑ Manufacturers instructions ☑ Lubrication schedules

☑ Spare parts inventory ☑ Equipment/parts suppliers

☐ Other (specify) _____

Comments:

17. What do the industrial waste contribution records contain (Municipal only)?

☑ Waste characteristics ☑ Impact on plant ☑ Locations and discharge types

☐ Other (specify) _____

Comments:

18. Which of the following records are kept at the plant and available to personnel?

☑ Equipment maintenance records ☑ Operational log ☑ Industrial contributor records

☑ Instrumentation records ☑ Sampling and testing records

Comments:

19. List records not normally available to plant personnel and their location:

Comments: **None**

20. Are the records maintained for the required time period (three or five years)? Comments:	☑ Yes ☐ No

VA DEQ Focused CEI Tech/Lab Inspection Report

Permit #	VA0021385

UNIT PROCESS EVALUATION SUMMARY SHEET

UNIT PROCESS	APPLICABLE	PROBLEMS*	COMMENTS
Sewage Pumping	X		*No problems observed*
Screenings	X		*Two (2) mechanical screens. No problems observed*
Grit removal	X		*Grit King – centrifugal grit removal. No problems observed*
Activate Sludge	X		*Bardenpho System – three (3) channels. No problems observed*
Sedimentation	X		*Three (3) clarifiers – One in service at the time of inspection. No problems observed*
Filtration	X		*Two (2) disc cloth filter units. No problems observed*
Ultraviolet (UV) Disinfection	X		*Two (2) UV banks. No problems observed*
Post Aeration	X		*No problems observed*
Flow Measurement	X		*No problems observed*
Plant Outfall	X		*No problems observed*
Bio-augmentation Clarifier	X		*No problems observed*
Sludge Pumping	X		*No problems observed*
Aerobic Digester	X		*No problems observed*
Sludge Belt Press	X		*No problems observed*

* Problem Codes
1. Unit Needs Attention
2. Abnormal Influent/Effluent
3. Evidence of Equipment Failure
4. Unapproved Modification or Temporary Repair
5. Evidence of Process Upset
6. Other (explain in comments)

VA DEQ Focused CEI Tech/Lab Inspection Report

Permit #	VA0021385

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

Weather conditions: sunny with temperature in mid to upper 50s

Mr. Martin Robinson arrived at the Town of Orange - Wastewater Treatment Plant (WWTP) on October 30, 2015 at 1150 to conduct a technical inspection of the facility and to introduce himself as the new water compliance inspector for their facility, and Orange County.

Mr. Robinson met with Ms. Michelle Steinberger and Mr. Jesse Redmon. Mr. Robinson was given a tour the laboratory and then a tour of the facility. The facility is on a SCADA system.

Head works/ Primary treatment – Two mechanical bar screens operating in parallel with a compacter system to remove large debris prior to grit removal by a Grit King which uses centrifugal force. Ms. Steinberger said septage is received at a manhole located before the bar screens. No problems were observed.

Secondary Treatment – the biological process is the 4 – stage Bardenpho System (a single sludge suspended growth process). There are three channels. No problems were observed.

Clarifier – three secondary clarifiers, one clarifier was in operation at the time of inspection. Ms. Steinberger said when a heavy rain is forecasted they put more than one clarifier into service. Ms. Steinberger also stated that the weirs are cleaned once a week. No problems were observed.

Waste activated sludge is sent to aerobic digester. No problems were observed.

The bio-augmentation tank receives the water treatment plant sludge, WWTP plant drains, filter backwash, filtrate from the belt filter press, and decant from the aerobic sludge digesters. Transfer pumps convey this side stream to the main activated sludge process. No problems were observed

Filtration – two disc filter units-backwash is automatic. No problems were observed.

Disinfection is accomplished by Ultraviolet (UV) disinfection system. The bulbs are cleaned on an as needed basis. No problems were observed.

Outfall 001 – No problems were observed.

Mr. Robinson concluded the inspection and departed at 1300

VA DEQ Focused CEI Tech/Lab Inspection Report

Permit #	VA0021385

LABORATORY INSPECTION

PRESENT DURING INSPECTION:

1. Do lab records include sampling date/time, analysis date/time, sample location, test method, test results, analyst's initials, instrument calibration and maintenance, and Certificate of Analysis?
   ☑ Sampling Date/Time ☑ Analysis Date/Time ☑ Sample Location ☑ Test Method ☑ Test Results
   ☑ Analyst's Initials ☑ Instrument Calibration & Maintenance
   ☑ Chain of Custody ☑ Certificate of Analysis

2.	Are Discharge Monitoring Reports complete and correct? Month(s) reviewed: November 2013, March 2014, and October 2015	☑ Yes ☐ No
3.	Are sample location(s) according to permit requirements (after all treatment unless otherwise specified)?	☑ Yes ☐ No
4.	Are sample collection, preservation, and holding times appropriate; and is sampling equipment adequate?	☑ Yes ☐ No
5.	Are grab and composite samples representative of the flow and the nature of the monitored activity?	☑ Yes ☐ No
6.	If analysis is performed at another location, are shipping procedures adequate? List parameters and name & address of contract lab(s): • **EnviroCompliance Laboratories, Inc.** **10357 Old Keeton Road** **Ashland, VA 23005** **VELAP ID: 460032** **TKN, $NO_2 + NO_3$, Total Recoverable Cu & Zn, Total Hardness**	☑ Yes ☐ No
7.	Are annual thermometer calibration(s) adequate?	☑ Yes ☐ No

8. Parameters evaluated during this inspection (attach checklists):
   ☑ pH
   ☐ Temperature
   ☐ Total Residual Chlorine
   ☑ Dissolved Oxygen
   ☐ Biochemical Oxygen Demand
   ☐ Total Suspended Solids
   ☐ Other (specify) _____
   ☐ Other (specify) _____
   ☐ Other (specify) _____

Comments: **The Town of Orange WWTP on-site laboratory VELAP ID: 450134: *E. coli*, TSS, TP, CBOD**

VA DEQ Focused CEI Tech/Lab Inspection Report

Permit #	VA0021385

EFFLUENT FIELD DATA:

Flow	MGD	**Dissolved Oxygen**	9.5 mg/L	**TRC (Contact Tank)**	NA mg/L
pH	8.174 S.U.	**Temperature**	18 °C	**TRC (Final Effluent)**	NA mg/L

Was a Sampling Inspection conducted? ☐ Yes (see Sampling Inspection Report) ☑ No

CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

1. Type of outfall: ☐ Shore based ☑ Submerged Diffuser? ☐ Yes ☑ No
2. Are the outfall and supporting structures in good condition? ☑ Yes ☐ No
3. Final Effluent (evidence of following problems): ☐ Sludge bar ☐ Grease ☐ Turbid effluent ☐ Visible foam ☐ Unusual color ☐ Oil sheen
4. Is there a visible effluent plume in the receiving stream? ☐ Yes ☑ No
5. Receiving stream: ☑ No observed problems ☐ Indication of problems (explain below)

Comments:

NOTES and COMMENTS:

Mr. Redmon collects a sample to do the analysis for the DO and pH in a room in the filtration building near the UV disinfection that allows for the sample to analyzed within 15 minutes of collection. Analysis is not conducted in the facility VELAP certified lab or in-situ.

VA DEQ Focused CEI Tech/Lab Inspection Report

ANALYST:	Jesse Redmon	VPDES NO	VA0021385

Meter: Orion Star pH meter

Parameter: Hydrogen Ion (pH)
Method: Electrometric
11/2014

METHOD OF ANALYSIS:

X	21st Edition of Standard Methods (SM 21) – 4500-H^+ B-2000 (SM 21 pH)
	22nd Edition of Standard Methods (SM 22), or Online Editions of Standard Methods – 4500-H^+ B-2011 (SM 22 pH)

	pH is a method-defined analyte so modifications are not allowed. [40 CFR Part 136.6]	Y	N
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? **NOTE**: Analyze 4 samples of known pH; you may use an external source of buffers or other known standards (different lot/manufacturer than buffers used to calibrate meter). Recovery for each of the 4 samples must be +/- 0.2 SU of the known concentration of the sample. [SM 1020 B.1] **NOTE: The same pH buffer [values] used for calibration of the instrument can be used as LCS if from a different source or different lot.**	X	
2)	**IF** a replicate sample is analyzed is there a written procedure for which result will be reported on DMR (Sample or Replicate) and is this procedure being followed? [DEQ – based on EPA Good Laboratory Practices Standards]		
3)	Is a Laboratory Control Sample (LCS) tested at least annually and are results within acceptance criteria? [SM 21 B.2 or SM 22 1020 B.3.] **NOTE:** LCS should be a purchased Proficiency Test (PT) sample or a different buffer other than ones used for calibration of the meter [with a ±0.1 SU acceptance range or within "Acceptable Range" specified by the PT provider].. **NOTE: The same pH buffer [values] used for calibration of the instrument can be used as LCS if from a different source or different lot.**	X	
4)	Is the electrode in good condition (no chloride precipitate, scratches, deterioration, etc.)? [SM 21 pH or SM 22 pH 2.b./c. and 5.b.]	X	
5)	Is electrode storage solution in accordance with manufacturer's instructions? [SM 21 pH or SM 22 pH 4.a. and Mfr.]	X	
6)	Is meter calibrated on at least a daily basis using three buffers all of which are at the same temperature? [SM 21 pH or SM 22 pH 4.a.] **NOTE**: Start with Buffer 7 unless manufacturer's instructions state otherwise. **[NOTE:** If meter is not capable of 3 buffer calibration use 2 buffers bracketing the expected sample pH and then measure a 3rd buffer (the measurement value recorded must be ±0.1 SU), and then reread and record value of buffer 7 to ensure ±0.1 SU.]	X	
7)	After calibration, is a buffer analyzed as a check sample to verify that calibration is correct? Verification measurement should be within +/- 0.1 SU. [SM 21 1020 B 10.c. or SM 22 1020 B 11.c.]	X	
8)	Is calibration verification measurement repeated with every 10 samples and at the end of a series of samples? Verification measurement should be within +/- 0.1 SU. [SM 21 pH or SM 22 pH 4020 B 2.b.] **NOTE:** Not applicable if pH meter is calibrated before taking any measurement (e.g., if operator monitors daily pH at more than one facility and calibrates before each measurement).	X	

9)	Do the buffer solutions appear to be free of contamination or growths? [SM 21 pH or SM 22 pH 3.a.]	X	
10)	Are buffer solutions within the listed shelf-life or have they been prepared within the last 4 weeks? [SM 21 pH or SM 22 pH 3.a.]	X	
11)	Is the cap or sleeve covering the access hole on the reference electrode removed when measuring pH? [Mfr.]	X	
12)	Is sample analyzed within 15 minutes of collections? [40 CFR Part 136]	X	
13)	Is the electrode rinsed and then blotted dry between reading solutions (Disregard if a portion of the next sample analyzed is used as the rinsing solution.)? [SM 21 pH or SM 22 pH 4.a and 4.b]	X	
14)	Is the sample stirred gently at a constant speed during measurement? [SM 21 pH or SM 22 pH 4.b.]	X	
15)	Does the meter hold a steady reading after reaching equilibrium? [4.b.]	X	

Comments: None

VA DEQ Focused CEI Tech/Lab Inspection Report

ANALYST:	Jesse Redmon	VPDES NO.	VA0021385

Parameter: Dissolved Oxygen
Method: Luminescence-based Sensor Procedure
11/2014

METHOD OF ANALYSIS:

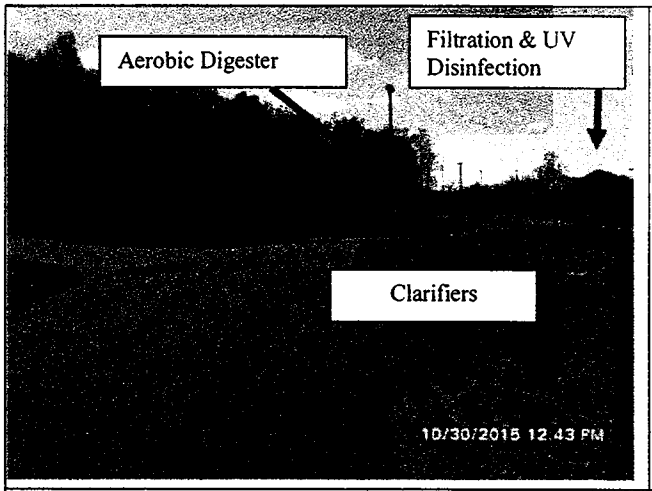
X	ASTM D 888-09 (C)
	HACH LDO – 10360
	In-Situ - 1002-8-2009
	YSI – ASTM D 888-09 (C)

		Y	N
1)	Has Initial Demonstration of Laboratory Capability been performed by each analyst? [ASTM 29.5 and ASTM 31.3]	X	
	a. Prepare air-saturated water by bubbling air for at least 30 min. through 1500mL water that is at room temperature (± 2°C). **NOTE:** An in-line air filter must be used with the aeration tubing (i.e., cotton, glass wool, other suitable material).		
	b. Allow air-saturated water to equilibrate for 45 – 60 minutes.		
	c. Transfer aerated water to four clean BOD bottles, beakers or other suitable containers until overflowing, then sealed.		
	d. Analyze samples.		
	e. Use a D.O. table to calculate theoretical D.O. based on sample temperature and barometric pressure (or altitude correction factor applied). Results must be between 97-104% of calculated value.		
2	Are calibration results (mg/L) within ± 4% of the barometric (or altitude) corrected oxygen saturated water value? [SM 21 B.2 or SM 22 1020 B.2.]	X	
3)	If samples are collected, is collection carried out with a minimum of turbulence and air bubble formation? [ASTM 6.2]	X	
4)	If samples are collected, is the sample bottle allowed to overflow several times its volume? [ASTM 6.4]	X	
5)	Is meter calibrated before use or at least daily? **NOTE:** If using water saturated air the instrument must be in 'O_2 Calibration' mode and sensor cap must be above surface of liquid. [ASTM 29.2, 29.4 & 29.5]	X	
6)	Is calibration verification within 97% to 104% of the theoretical D.O.? [ASTM 29.7.1] Temperature must be recorded. [ASTM 29.5.6]	X	
7)	Is calibration procedure performed according to manufacturer's instructions? [Mfr.]	X	
8)	Does the lot code on the meter display match the lot code printed on the sensor cap? **NOTE:** Code begins with a number between '3' and '9'. NOTE: This requirement may not be applicable for sensors from other manufacturers. [Mfr.]	X	
9)	Is sensor cap replaced after one year? **NOTE:** "Cap Expired icon" will display in results window and data exported will be flagged with an asterisk. This requirement may not be applicable for sensors from other manufacturers. [Mfr.]	X	

10)	Are air bubbles trapped on probe tip dislodged before taking a reading? [Mfr.]	X	
11)	Is black surface of the sensor cap clean and unscratched? This requirement may not be applicable for sensors from other manufacturers. [Mfr.]	X	
12)	When taking reading is probe deep enough in sample to cover the thermistor on side of probe? **NOTE:** Care should be taken to not touch the thermistor because it will cause an incorrect temperature reading. [Mfr.]	X	
13)	Is there adequate flow/stirring during calibration and sample analysis? [ASTM 29.6 and Mfr.]	X	
14)	Is meter stabilized before reading D.O.? [Mfr.]	X	
15)	Is temperature recorded at time of analysis? [Permit, ASTM 29.5.6]	X	
16)	Is accuracy of thermistor checked annually? [Permit]	X	
17)	Is 'Dry Storage' used for probes immersed less than 6 hrs per day and 'Wet Storage' for tips immersed more than 6 hrs per day? This requirement may not be applicable for sensors from other manufacturers. [Mfr.]	X	

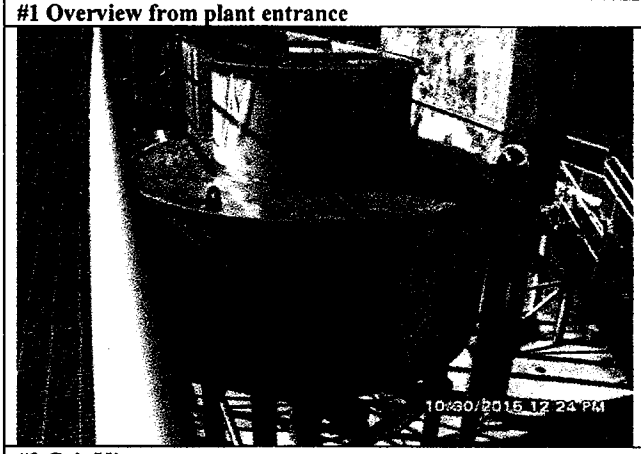
Comments: **None**

VA DEQ Focused CEI Tech/Lab Inspection Report

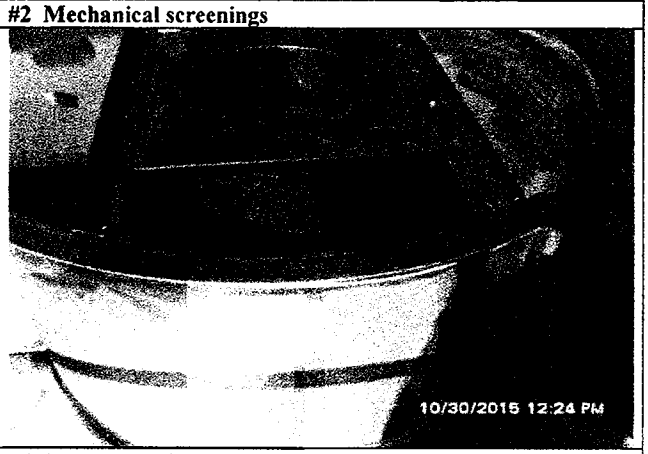


#1 Overview from plant entrance

#2 Mechanical screenings

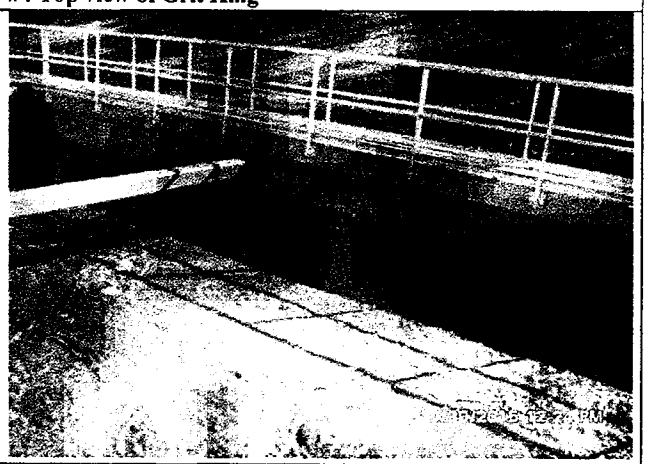


#3 Grit King

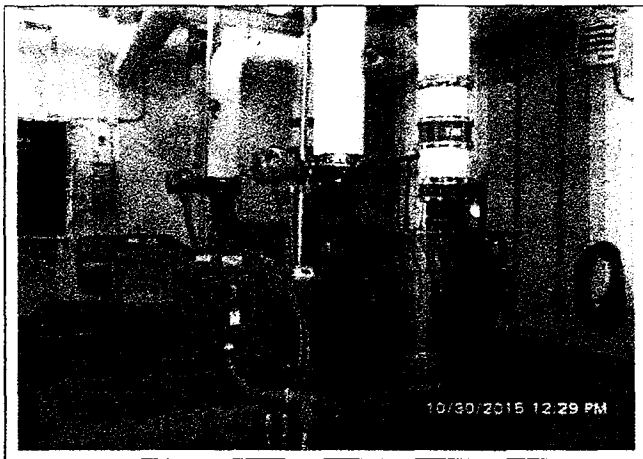


#4 Top view of Grit King

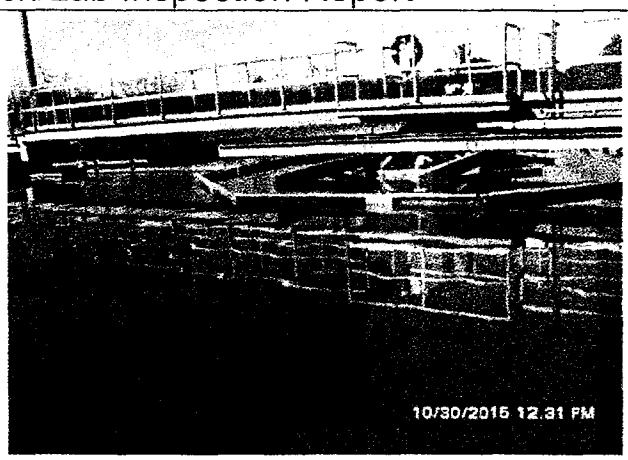
#5 Entry to Bardenpho System



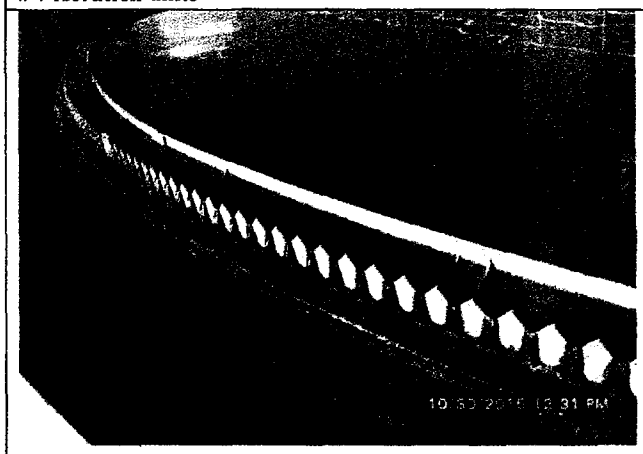
#6 Another view of the Bardenpho (activated sludge)



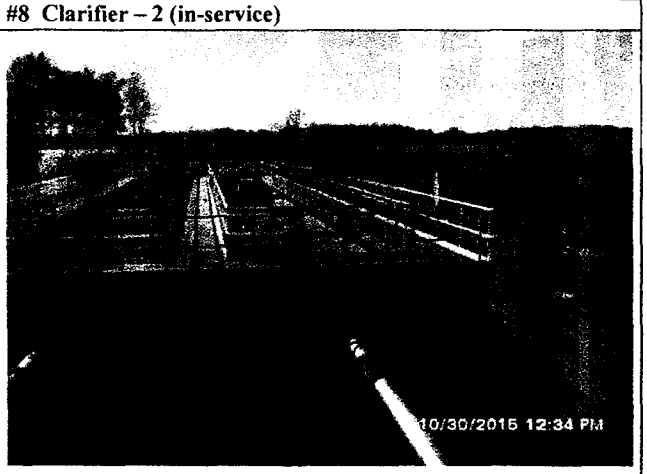
 # 7 Aeration units



#8 Clarifier – 2 (in-service)

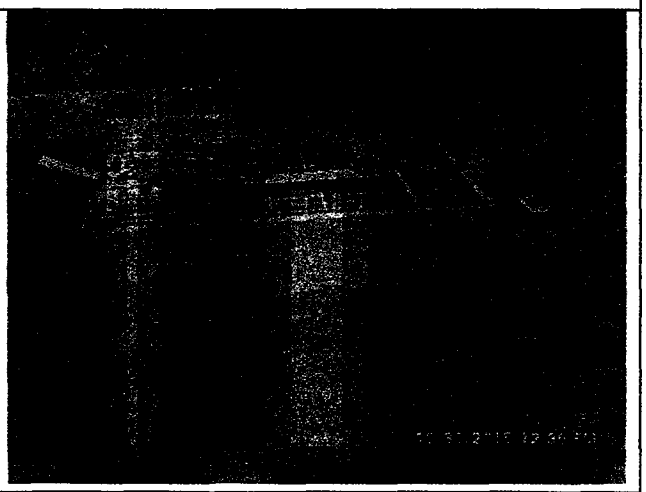


#9 Weirs close up

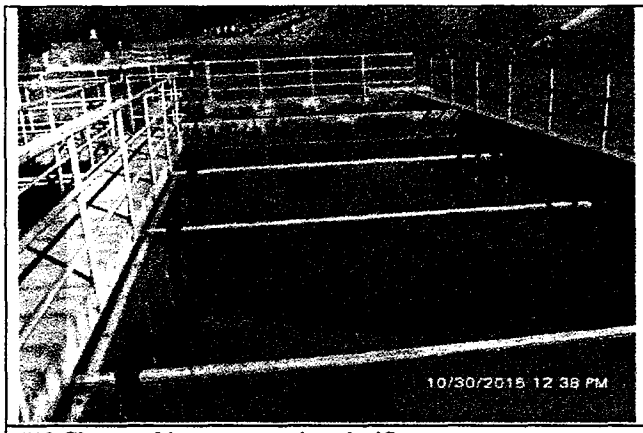


#10 Aerobic digester

#11 Return pumps



#12 Bio-augmentation clarifier



#13 Close-up bio-augmentation clarifier

#14 Close-up of the cloth disc filters

Facility name: Town of Orange WWTP **VPDES Permit No. VA0021385**
Site Inspection Date: 10/30/2015 **Photos & Layout by: Martin S. Robinson**

Attachment 7 – Planning Statement

To: Caitlin Shipman
From: Rebecca Shoemaker

Date: 2/4/2016
Subject: Planning Statement for Town of Orange STP
Permit Number: VA0021385

Information for Outfall 001:
Discharge Type: Municipal
Discharge Flow: Design Flow of 3.0 MGD
Receiving Stream: Rapidan River
Latitude / Longitude: N 38 15' 56.8" / W 78 09' 21.3"
Rivermile: 48.2
Streamcode: 3-RAP
Waterbody: VAN-E13R/RA30
Water Quality Standards: Class III, Section 4, no special standards
Drainage Area: 233 square miles

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

This facility discharges to the Rapidan River. DEQ ambient monitoring station 3-RAP045.08 is located at Route 15, approximately 3.12 miles downstream from Outfall 001.

Class III, Section 4.

DEQ monitoring stations located in this segment of the Rapidan River:
- *ambient monitoring station 3-RAP045.08, at Route 15*

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. The aquatic life and wildlife uses are considered fully supporting. The fish consumption use was not assessed.

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

Yes.

Table A. 303(d) Impairment and TMDL information for the receiving stream segment

Waterbody Name	Impaired Use	Cause	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the Draft 2014 Integrated Report						
Rapidan River	Recreation	*E. coli*	Rapidan River Bacteria TMDL 12/05/2007	5.22E+12 cfu/year *E. coli*	126 cfu/100 ml *E. coli* --- 3.000 MGD	---

3. Are there any 303(d) listed impairments within 15 miles downstream that are relevant to this discharge? If yes, please fill out Table B.

No.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

The tidal Rappahannock River, which is located approximately 61 miles downstream of this facility, is listed with a PCB impairment. In support for the PCB TMDL that is scheduled for development by 2016 for the tidal Rappahannock River, this facility is a candidate for low-level PCB monitoring, based upon its designation as a municipal discharger. This facility conducted PCB monitoring during the last permit cycle in support of the PCB TMDL. The PCB monitoring data will be evaluated, and source reductions through pollution minimization plans may be needed.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There is one drinking water intake for the Town of Orange located within a five mile radius of Outfall 001.

Attachment 8 – Freshwater Water Quality/Wasteload Allocation Analysis (MSTRANTI Spreadsheet)

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Town of Orange WWTP Permit No.: VA0021385

Receiving Stream: Rapidan River Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	29.6 mg/L	1Q10 (Annual) =	1.49 MGD	Annual - 1Q10 Mix =	7.51 %	Mean Hardness (as CaCO3) =	120.7 mg/L
90% Temperature (Annual) =	24.6 deg C	7Q10 (Annual) =	2.68 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	25 deg C
90% Temperature (Wet season) =	13.8 deg C	30Q10 (Annual) =	6.65 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	15 deg C
90% Maximum pH =	7.6 SU	1Q10 (Wet season) =	19.86 MGD	Wet Season - 1Q10 Mix =	32.84 %	90% Maximum pH =	8.6 SU
10% Maximum pH =	6.9 SU	30Q10 (Wet season)	35.71 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	7.8 SU
Tier Designation (1 or 2) =	1	30Q5 =	10.61 MGD			Discharge Flow =	3 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	55.52 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
Acrolein	0	--	--	na	9.3E+00	--	--	na	4.2E+01	--	--	--	--	--	--	--	--	--	--	na	4.2E+01
Acrylonitrile [C]	0	--	--	na	2.5E+00	--	--	na	4.9E+01	--	--	--	--	--	--	--	--	--	--	na	4.9E+01
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.1E+00	--	na	9.8E-03	--	--	--	--	--	--	--	--	3.1E+00	--	na	9.8E-03
Ammonia-N (mg/l) (Yearly)	0	3.34E+00	1.77E+00	na	--	3.46E+00	5.68E+00	na	--	--	--	--	--	--	--	--	--	3.46E+00	5.68E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1.34E+01	3.85E+00	na	--	4.24E+01	4.97E+01	na	--	--	--	--	--	--	--	--	--	4.24E+01	4.97E+01	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	1.8E+05	--	--	--	--	--	--	--	--	--	--	na	1.8E+05
Antimony	0	--	--	na	6.4E+02	--	--	na	2.9E+03	--	--	--	--	--	--	--	--	--	--	na	2.9E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	3.5E+02	2.8E+02	na	--	--	--	--	--	--	--	--	--	3.5E+02	2.8E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	9.9E+03	--	--	--	--	--	--	--	--	--	--	na	9.9E+03
Benzidine [C]	0	--	--	na	2.0E-03	--	--	na	3.9E-02	--	--	--	--	--	--	--	--	--	--	na	3.9E-02
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	3.5E+00	--	--	--	--	--	--	--	--	--	--	na	3.5E+00
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.5E+00	--	--	--	--	--	--	--	--	--	--	na	3.5E+00
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.5E+00	--	--	--	--	--	--	--	--	--	--	na	3.5E+00
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	3.5E+00	--	--	--	--	--	--	--	--	--	--	na	3.5E+00
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	1.0E+02	--	--	--	--	--	--	--	--	--	--	na	1.0E+02
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	2.9E+05	--	--	--	--	--	--	--	--	--	--	na	2.9E+05
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	4.3E+02	--	--	--	--	--	--	--	--	--	--	na	4.3E+02
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	2.7E+04	--	--	--	--	--	--	--	--	--	--	na	2.7E+04
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	8.6E+03	--	--	--	--	--	--	--	--	--	--	na	8.6E+03
Cadmium	0	4.7E+00	9.3E-01	na	--	4.9E+00	1.8E+00	na	--	--	--	--	--	--	--	--	--	4.9E+00	1.8E+00	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	3.1E+02	--	--	--	--	--	--	--	--	--	--	na	3.1E+02
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.5E+00	8.1E-03	na	1.6E-01	--	--	--	--	--	--	--	--	2.5E+00	8.1E-03	na	1.6E-01
Chloride	0	8.6E+05	2.3E+05	na	--	8.9E+05	4.4E+05	na	--	--	--	--	--	--	--	--	--	8.9E+05	4.4E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	2.0E+01	2.1E+01	na	--	--	--	--	--	--	--	--	--	2.0E+01	2.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	7.3E+03	--	--	--	--	--	--	--	--	--	--	na	7.3E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane [C]	0	--	--	na	1.3E+02	--	--	na	2.5E+03	--	--	--	--	--	--	--	--	--	--	na	2.5E+03
Chloroform	0	--	--	na	1.1E+04	--	--	na	5.0E+04	--	--	--	--	--	--	--	--	--	--	na	5.0E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	7.3E+03	--	--	--	--	--	--	--	--	--	--	na	7.3E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	6.8E+02	--	--	--	--	--	--	--	--	--	--	na	6.8E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.6E-02	7.8E-02	na	--	--	--	--	--	--	--	--	--	8.6E-02	7.8E-02	na	--
Chromium III	0	6.5E+02	6.0E+01	na	--	6.7E+02	1.1E+02	na	--	--	--	--	--	--	--	--	--	6.7E+02	1.1E+02	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.7E+01	2.1E+01	na	--	--	--	--	--	--	--	--	--	1.7E+01	2.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	3.5E-01	--	--	--	--	--	--	--	--	--	--	na	3.5E-01
Copper	0	1.6E+01	7.2E+00	na	--	1.6E+01	1.4E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.4E+01	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.3E+01	9.8E+00	na	7.3E+04	--	--	--	--	--	--	--	--	2.3E+01	9.8E+00	na	7.3E+04
DDD [C]	0	--	--	na	3.1E-03	--	--	na	6.0E-02	--	--	--	--	--	--	--	--	--	--	na	6.0E-02
DDE [C]	0	--	--	na	2.2E-03	--	--	na	4.3E-02	--	--	--	--	--	--	--	--	--	--	na	4.3E-02
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.9E-03	na	4.3E-02	--	--	--	--	--	--	--	--	1.1E+00	1.9E-03	na	4.3E-02
Demeton	0	--	1.0E-01	na	--	--	1.9E-01	na	--	--	--	--	--	--	--	--	--	--	1.9E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.8E-01	3.2E-01	na	--	--	--	--	--	--	--	--	--	1.8E-01	3.2E-01	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	3.5E+00	--	--	--	--	--	--	--	--	--	--	na	3.5E+00
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	4.4E+03	--	--	--	--	--	--	--	--	--	--	na	4.4E+03
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	8.6E+02	--	--	--	--	--	--	--	--	--	--	na	8.6E+02
3,3-Dichlorobenzidine [C]	0	--	--	na	2.8E-01	--	--	na	5.5E+00	--	--	--	--	--	--	--	--	--	--	na	5.5E+00
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	3.3E+03	--	--	--	--	--	--	--	--	--	--	na	3.3E+03
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	7.2E+03	--	--	--	--	--	--	--	--	--	--	na	7.2E+03
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	3.2E+04	--	--	--	--	--	--	--	--	--	--	na	3.2E+04
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	4.5E+04	--	--	--	--	--	--	--	--	--	--	na	4.5E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane [C]	0	--	--	na	1.5E+02	--	--	na	2.9E+03	--	--	--	--	--	--	--	--	--	--	na	2.9E+03
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	4.1E+03	--	--	--	--	--	--	--	--	--	--	na	4.1E+03
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.5E-01	1.1E-01	na	1.1E-02	--	--	--	--	--	--	--	--	2.5E-01	1.1E-01	na	1.1E-02
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	na	2.0E+05
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	3.9E+03	--	--	--	--	--	--	--	--	--	--	na	3.9E+03
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	5.0E+06	--	--	--	--	--	--	--	--	--	--	na	5.0E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	2.4E+04	--	--	--	--	--	--	--	--	--	--	na	2.4E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	6.6E+02	--	--	--	--	--	--	--	--	--	--	na	6.6E+02
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	2.3E-07	--	--	--	--	--	--	--	--	--	--	na	2.3E-07
1,2-Diphenylhydrazine [C]	0	--	--	na	2.0E+00	--	--	na	3.9E+01	--	--	--	--	--	--	--	--	--	--	na	3.9E+01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.3E-01	1.1E-01	na	4.0E+02	--	--	--	--	--	--	--	--	2.3E-01	1.1E-01	na	4.0E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.3E-01	1.1E-01	na	4.0E+02	--	--	--	--	--	--	--	--	2.3E-01	1.1E-01	na	4.0E+02
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.3E-01	1.1E-01	--	--	--	--	--	--	--	--	--	--	2.3E-01	1.1E-01	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.9E-02	6.8E-02	na	2.7E-01	--	--	--	--	--	--	--	--	8.9E-02	6.8E-02	na	2.7E-01
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	1.4E+00	--	--	--	--	--	--	--	--	--	--	na	1.4E+00

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	9.5E+03	--	--	--	--	--	--	--	--	--	--	na	9.5E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	2.4E+04	--	--	--	--	--	--	--	--	--	--	na	2.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.9E-02	na	--	--	--	--	--	--	--	--	--	--	1.9E-02	na	--
Heptachlor [c]	0	5.2E-01	3.8E-03	na	7.9E-04	5.4E-01	7.2E-03	na	1.5E-02	--	--	--	--	--	--	--	--	5.4E-01	7.2E-03	na	1.5E-02
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	na	3.9E-04	5.4E-01	7.2E-03	na	7.6E-03	--	--	--	--	--	--	--	--	5.4E-01	7.2E-03	na	7.6E-03
Hexachlorobenzene[c]	0	--	--	na	2.9E-03	--	--	na	5.7E-02	--	--	--	--	--	--	--	--	--	--	na	5.7E-02
Hexachlorobutadiene[c]	0	--	--	na	1.8E+02	--	--	na	3.5E+03	--	--	--	--	--	--	--	--	--	--	na	3.5E+03
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	na	4.9E-02	--	--	na	9.6E-01	--	--	--	--	--	--	--	--	--	--	na	9.6E-01
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	na	1.7E-01	--	--	na	3.3E+00	--	--	--	--	--	--	--	--	--	--	na	3.3E+00
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.9E-01	--	na	3.5E+01	--	--	--	--	--	--	--	--	9.9E-01	--	na	3.5E+01
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	5.0E+03	--	--	--	--	--	--	--	--	--	--	na	5.0E+03
Hexachloroethane[c]	0	--	--	na	3.3E+01	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	3.8E+00	na	--	--	--	--	--	--	--	--	--	--	3.8E+00	na	--
Indeno (1,2,3-cd) pyrene [c]	0	--	--	na	1.8E-01	--	--	na	3.5E+00	--	--	--	--	--	--	--	--	--	--	na	3.5E+00
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone[c]	0	--	--	na	9.6E+03	--	--	na	1.9E+05	--	--	--	--	--	--	--	--	--	--	na	1.9E+05
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	1.5E+02	9.8E+00	na	--	1.5E+02	1.9E+01	na	--	--	--	--	--	--	--	--	--	1.5E+02	1.9E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	1.9E-01	na	--	--	--	--	--	--	--	--	--	--	1.9E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.5E+00	1.5E+00	--	--	--	--	--	--	--	--	--	--	1.5E+00	1.5E+00	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	6.8E+03	--	--	--	--	--	--	--	--	--	--	na	6.8E+03
Methylene Chloride [c]	0	--	--	na	5.9E+03	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Methoxychlor	0	--	3.0E-02	na	--	--	5.7E-02	na	--	--	--	--	--	--	--	--	--	--	5.7E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	2.1E+02	1.6E+01	na	4.6E+03	2.2E+02	3.1E+01	na	2.1E+04	--	--	--	--	--	--	--	--	2.2E+02	3.1E+01	na	2.1E+04
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	3.1E+03	--	--	--	--	--	--	--	--	--	--	na	3.1E+03
N-Nitrosodimethylamine[c]	0	--	--	na	3.0E+01	--	--	na	5.9E+02	--	--	--	--	--	--	--	--	--	--	na	5.9E+02
N-Nitrosodiphenylamine[c]	0	--	--	na	6.0E+01	--	--	na	1.2E+03	--	--	--	--	--	--	--	--	--	--	na	1.2E+03
N-Nitrosodi-n-propylamine[c]	0	--	--	na	5.1E+00	--	--	na	9.9E+01	--	--	--	--	--	--	--	--	--	--	na	9.9E+01
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.9E+01	1.2E+01	na	--	--	--	--	--	--	--	--	--	2.9E+01	1.2E+01	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.7E-02	2.5E-02	na	--	--	--	--	--	--	--	--	--	6.7E-02	2.5E-02	na	--
PCB Total[c]	0	--	1.4E-02	na	6.4E-04	--	2.7E-02	na	1.2E-02	--	--	--	--	--	--	--	--	--	2.7E-02	na	1.2E-02
Pentachlorophenol [c]	0	1.8E+01	7.9E+00	na	3.0E+01	1.8E+01	1.5E+01	na	5.9E+02	--	--	--	--	--	--	--	--	1.8E+01	1.5E+01	na	5.9E+02
Phenol	0	--	--	na	8.6E+05	--	--	na	3.9E+06	--	--	--	--	--	--	--	--	--	--	na	3.9E+06
Pyrene	0	--	--	na	4.0E+03	--	--	na	1.8E+04	--	--	--	--	--	--	--	--	--	--	na	1.8E+04
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.1E+01	9.5E+00	na	1.9E+04	--	--	--	--	--	--	--	--	2.1E+01	9.5E+00	na	1.9E+04
Silver	0	4.5E+00	--	na	--	4.7E+00	--	na	--	--	--	--	--	--	--	--	--	4.7E+00	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Thallium	0	--	--	na	4.7E-01	--	--	na	2.1E+00	--	--	--	--	--	--	--	--	--	--	na	2.1E+00
Toluene	0	--	--	na	6.0E+03	--	--	na	2.7E+04	--	--	--	--	--	--	--	--	--	--	na	2.7E+04
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.6E-01	3.8E-04	na	5.5E-02	--	--	--	--	--	--	--	--	7.6E-01	3.8E-04	na	5.5E-02
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.8E-01	1.4E-01	na	--	--	--	--	--	--	--	--	--	4.8E-01	1.4E-01	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	3.2E+02	--	--	--	--	--	--	--	--	--	--	na	3.2E+02
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	3.1E+03	--	--	--	--	--	--	--	--	--	--	na	3.1E+03
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	4.7E+02	--	--	--	--	--	--	--	--	--	--	na	4.7E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	4.7E+02	--	--	--	--	--	--	--	--	--	--	na	4.7E+02
Zinc	0	1.3E+02	9.5E+01	na	2.6E+04	1.4E+02	1.8E+02	na	1.2E+05	--	--	--	--	--	--	--	--	1.4E+02	1.8E+02	na	1.2E+05

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	2.9E+03
Arsenic	1.4E+02
Barium	na
Cadmium	1.1E+00
Chromium III	6.8E+01
Chromium VI	6.6E+00
Copper	6.5E+00
Iron	na
Lead	1.1E+01
Manganese	na
Mercury	5.8E-01
Nickel	1.9E+01
Selenium	5.7E+00
Silver	1.9E+00
Zinc	5.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Attachment 9 – Ambient Water Quality Data for Waterbody VAN-E13R

Table 1. Water Quality Criteria for Waterbody VAN-E13R

90% Temperature (°C) Annual	24.6
90% Temperature (°C) Wet Season	13.8
90% Max pH (S.U.) Annual	7.6
10% Max pH (S.U.) Annual	6.9
90% Max pH (S.U.) Wet Season	7.6
10% Max pH (S.U.) Wet Season	7
Mean Hardness (as CaCO3)	29.6

Attachment 10 – Effluent pH Data Calculations

Due	Outfall	Parameter Description	CONC MIN	Lim Min	CONC AVG	Lim Avg	CONC MAX	Lim Max	Concentration Unit Lim
10-Jan-2016	001	pH	7.3	6.0	NULL	**********	7.9	9.0	SU
10-Dec-2015	001	pH	7.5	6.0	NULL	**********	8.2	9.0	SU
10-Nov-2015	001	pH	7.2	6.0	NULL	**********	7.8	9.0	SU
10-Oct-2015	001	pH	7.4	6.0	NULL	**********	7.8	9.0	SU
10-Sep-2015	001	pH	7.2	6.0	NULL	**********	7.8	9.0	SU
10-Aug-2015	001	pH	7.3	6.0	NULL	**********	7.9	9.0	SU
10-Jul-2015	001	pH	7.5	6.0	NULL	**********	7.8	9.0	SU
10-Jun-2015	001	pH	7.2	6.0	NULL	**********	7.9	9.0	SU
10-May-2015	001	pH	7.4	6.0	NULL	**********	7.9	9.0	SU
10-Apr-2015	001	pH	6.9	6.0	NULL	**********	7.9	9.0	SU
10-Mar-2015	001	pH	7.4	6.0	NULL	**********	7.9	9.0	SU
10-Feb-2015	001	pH	7.2	6.0	NULL	**********	8.2	9.0	SU
10-Jan-2015	001	pH	7.0	6.0	NULL	**********	7.9	9.0	SU
10-Dec-2014	001	pH	7.6	6.0	NULL	**********	7.9	9.0	SU
10-Nov-2014	001	pH	7.5	6.0	NULL	**********	7.9	9.0	SU
10-Oct-2014	001	pH	7.5	6.0	NULL	**********	8.1	9.0	SU
10-Sep-2014	001	pH	7.3	6.0	NULL	**********	8.1	9.0	SU
10-Aug-2014	001	pH	7.5	6.0	NULL	**********	7.9	9.0	SU
10-Jul-2014	001	pH	7.5	6.0	NULL	**********	7.9	9.0	SU
10-Jun-2014	001	pH	7.2	6.0	NULL	**********	7.9	9.0	SU
10-May-2014	001	pH	7.3	6.0	NULL	**********	7.8	9.0	SU
10-Apr-2014	001	pH	7.3	6.0	NULL	**********	7.7	9.0	SU
10-Mar-2014	001	pH	7.2	6.0	NULL	**********	7.7	9.0	SU
10-Feb-2014	001	pH	7.3	6.0	NULL	**********	7.9	9.0	SU
10-Jan-2014	001	pH	7.5	6.0	NULL	**********	7.9	9.0	SU

10-Dec-2013	001	pH	7.5	*6.0*	NULL	**********	8.1	*9.0*	SU
10-Nov-2013	001	pH	7.3	*6.0*	NULL	**********	8.2	*9.0*	SU
10-Oct-2013	001	pH	7.4	*6.0*	NULL	**********	8.5	*9.0*	SU
10-Sep-2013	001	pH	7.1	*6.0*	NULL	**********	8.2	*9.0*	SU
10-Aug-2013	001	pH	7.3	*6.0*	NULL	**********	8.3	*9.0*	SU
10-Jul-2013	001	pH	7.3	*6.0*	NULL	**********	8.2	*9.0*	SU
10-Jun-2013	001	pH	7.2	*6.0*	NULL	**********	8.2	*9.0*	SU
10-May-2013	001	pH	7.4	*6.0*	NULL	**********	8.5	*9.0*	SU
10-Apr-2013	001	pH	7.4	*6.0*	NULL	**********	8.6	*9.0*	SU
10-Mar-2013	001	pH	7.2	*6.0*	NULL	**********	8	*9.0*	SU
10-Feb-2013	001	pH	7.4	*6.0*	NULL	**********	8.8	*9.0*	SU
10-Jan-2013	001	pH	7.2	*6.0*	NULL	**********	8.9	*9.0*	SU
10-Dec-2012	001	pH	7.3	*6.0*	NULL	**********	8.7	*9.0*	SU
10-Nov-2012	001	pH	7.4	*6.0*	NULL	**********	8.6	*9.0*	SU
10-Oct-2012	001	pH	7.3	*6.0*	NULL	**********	8.4	*9.0*	SU
10-Sep-2012	001	pH	7.3	*6.0*	NULL	**********	8.6	*9.0*	SU
10-Aug-2012	001	pH	7.3	*6.0*	NULL	**********	8.2	*9.0*	SU
10-Jul-2012	001	pH	7.5	*6.0*	NULL	**********	8.5	*9.0*	SU
10-Jun-2012	001	pH	7.3	*6.0*	NULL	**********	8.7	*9.0*	SU
10-May-2012	001	pH	7.4	*6.0*	NULL	**********	8.4	*9.0*	SU
10-Apr-2012	001	pH	7.1	*6.0*	NULL	**********	8.2	*9.0*	SU
10-Mar-2012	001	pH	7.0	*6.0*	NULL	**********	8	*9.0*	SU
10-Feb-2012	001	pH	7.5	*6.0*	NULL	**********	8	*9.0*	SU
10-Jan-2012	001	pH	7.4	*6.0*	NULL	**********	7.9	*9.0*	SU
10-Dec-2011	001	pH	7.5	*6.0*	NULL	**********	8.5	*9.0*	SU
10-Nov-2011	001	pH	7.3	*6.0*	NULL	**********	8	*9.0*	SU

10-Oct-2011	001	pH	7.2	*6.0*	NULL	**********	8.7	*9.0*	SU
10-Sep-2011	001	pH	7.2	*6.0*	NULL	**********	8	*9.0*	SU
10-Aug-2011	001	pH	7.1	*6.0*	NULL	**********	8	*9.0*	SU
10-Jul-2011	001	pH	4.6	*6.0*	NULL	**********	8	*9.0*	SU
10-Jun-2011	001	pH	7.4	*6.0*	NULL	**********	8.2	*9.0*	SU
10-May-2011	001	pH	7.3	*6.0*	NULL	**********	7.9	*9.0*	SU
10-Apr-2011	001	pH	7.2	*6.0*	NULL	**********	7.8	*9.0*	SU
10-Mar-2011	001	pH	6.9	*6.0*	NULL	**********	7.6	*9.0*	SU
10-Feb-2011	001	pH	7.1	*6.0*	NULL	**********	8	*9.0*	SU
10-Jan-2011	001	pH	7.3	*6.0*	NULL	**********	8.2	*9.0*	SU

90% max 8.6
10% max 7.8

Attachment 11 – Limit Derivations for Ammonia (STATS)

5/18/2016 1:09:56 PM

Facility = Town of Orange WWTP
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 3.46
WLAc = 5.68
Q.L. = .2
# samples/mo. = 20
# samples/wk. = 5

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 3.46
Average Weekly limit = 2.25508378633083
Average Monthly LImit = 1.78069511755289

The data are:

9

Attachment 12 – Summary of Effluent Data

DMR QA/QC

Permit #:VA0021385 Facility:Orange Town Sewage Treatment Plant

Due	Outfall	Parameter Description	QTY AVG	Lim Avg	QTY MAX	Lim Max	Quantity Unit Lim	CONC MIN	Lim Min	CONC AVG	Lim Avg	CONC MAX	Lim Max	Concentration Unit Lim
10-Jan-2011	001	AMMONIA, AS N MAY-DEC	NULL	********	NULL	********	NULL	NULL	********	NR	6.6	NR	8.9	MG/L
10-Jan-2011	001	BOD5, MAY-DEC	NR	85.0	NR	128.0	KG/D	NULL	********	1.7	30.0	1.7	45.0	MG/L
10-Jan-2016	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Dec-2015	001	CBOD5	0.8	110	3.3	170	KG/D	NULL	********	0.2	10	1	15	MG/L
10-Nov-2015	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Oct-2015	001	CBOD5	1.7	110	0.0	170	KG/D	NULL	********	0.5	10	0	15	MG/L
10-Sep-2015	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Aug-2015	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jul-2015	001	CBOD5	22.0	110	26.8	170	KG/D	NULL	********	5.6	10	7.1	15	MG/L
10-Jun-2015	001	CBOD5	8.6	110	25.0	170	KG/D	NULL	********	2.5	10	7.5	15	MG/L
10-May-2015	001	CBOD5	1.3	110	0.0	170	KG/D	NULL	********	0.4	10	0	15	MG/L
10-Apr-2015	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Mar-2015	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Feb-2015	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jan-2015	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Dec-2014	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Nov-2014	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Oct-2014	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Sep-2014	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Aug-2014	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jul-2014	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jun-2014	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-May-2014	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Apr-2014	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Mar-2014	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Feb-2014	001	CBOD5	0.00	110	0.00	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jan-2014	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Dec-2013	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Nov-2013	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Oct-2013	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Sep-2013	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Aug-2013	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jul-2013	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jun-2013	001	CBOD5	1.0	110	0.0	170	KG/D	NULL	********	0.3	10	0	15	MG/L
10-May-2013	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Apr-2013	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Mar-2013	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Feb-2013	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jan-2013	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Dec-2012	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Nov-2012	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Oct-2012	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Sep-2012	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Aug-2012	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jul-2012	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jun-2012	001	CBOD5	0	110	0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-May-2012	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Apr-2012	001	CBOD5	0	110	0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Mar-2012	001	CBOD5	0	110	0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Feb-2012	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jan-2012	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Dec-2011	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Nov-2011	001	CBOD5	0.0	110	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Oct-2011	001	CBOD5	1.3	110	5.6	170	KG/D	NULL	********	0.3	10	1.2	15	MG/L
10-Sep-2011	001	CBOD5	0.0	114	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Aug-2011	001	CBOD5	0.0	114	0.0	170	KG/D	NULL	********	0	10	0	15	MG/L
10-Jul-2011	001	CBOD5	0.9	114	4.1	170	KG/D	NULL	********	0.5	10	2.1	15	MG/L
10-Jun-2011	001	CBOD5	8.2	114	11.5	170	KG/D	NULL	********	2.4	10	2.7	15	MG/L
10-May-2011	001	CBOD5	12.3	114	18.1	170	KG/D	NULL	********	3.8	10	5.8	15	MG/L
10-Apr-2011	001	CBOD5	10.6	114	20.5	170	KG/D	NULL	********	2.6	10	3.1	15	MG/L
10-Mar-2011	001	CBOD5	17.3	114	11.1	170	KG/D	NULL	********	6.6	10	5.1	15	MG/L
10-Feb-2011	001	CBOD5	28.8	114	5.6	170	KG/D	NULL	********	8.1	10	3	15	MG/L
10-Oct-2015	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Sep-2015	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Aug-2015	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Jul-2015	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Jun-2015	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Oct-2014	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Sep-2014	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Aug-2014	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Jul-2014	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Jun-2014	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Oct-2013	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Sep-2013	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L
10-Aug-2013	001	CL2, INST RES MAX	NULL	********	NULL	********	NULL	NULL	********	NR	0.010	NR	0.012	MG/L

10-Jul-2013	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.010	NR	0.012	MG/L
10-Jun-2013	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.010	NR	0.012	MG/L
10-Oct-2012	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.010	NR	0.012	MG/L
10-Sep-2012	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.010	NR	0.012	MG/L
10-Aug-2012	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.010	NR	0.012	MG/L
10-Jul-2012	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	0	0.010	0	0.012	MG/L
10-Jun-2012	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.010	NR	0.012	MG/L
10-Oct-2011	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.010	NR	0.012	MG/L
10-Sep-2011	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.009	NR	0.01	MG/L
10-Aug-2011	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.009	NR	0.01	MG/L
10-Jul-2011	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.009	NR	0.01	MG/L
10-Jun-2011	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.009	NR	0.01	MG/L
10-May-2011	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.009	NR	0.01	MG/L
10-Apr-2011	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.009	NR	0.01	MG/L
10-Mar-2011	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.009	NR	0.01	MG/L
10-Feb-2011	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.009	NR	0.01	MG/L
10-Jan-2011	001	CL2, INST RES MAX	NULL	*********	NULL	*********	NULL	NULL	*********	NR	0.009	NR	0.01	MG/L
10-Jan-2011	001	CL2, INST TECH MIN LIMIT	NULL	*********	NULL	*********	NULL	NR	0.6	NULL	*********	NULL	*********	MG/L
10-Jan-2011	001	CL2, TOTAL CONTACT	NULL	*********	NULL	*********	NULL	NR	1.0	NULL	*********	NULL	*********	MG/L
10-Jan-2016	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Dec-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	0.7	9.6	5	9.6	UG/L
10-Nov-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Oct-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Sep-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Aug-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Jul-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Jun-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-May-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	5	9.6	5	9.6	UG/L
10-Apr-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Mar-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Feb-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	3	9.6	3	9.6	UG/L
10-Jan-2015	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Dec-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Nov-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Oct-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Sep-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Aug-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Jul-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Jun-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	3	9.6	3	9.6	UG/L
10-May-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	4.0	9.6	4.0	9.6	UG/L
10-Apr-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	2.0	9.6	2.0	9.6	UG/L
10-Mar-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	2.0	9.6	2.0	9.6	UG/L
10-Feb-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	8.0	9.6	8.0	9.6	UG/L
10-Jan-2014	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Dec-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Nov-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Oct-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	2.0	9.6	2.0	9.6	UG/L
10-Sep-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	0.0	9.6	0.0	9.6	UG/L
10-Aug-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	2.0	9.6	2.0	9.6	UG/L
10-Jul-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	4.0	9.6	4.0	9.6	UG/L
10-Jun-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	2.0	9.6	2.0	9.6	UG/L
10-May-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Apr-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Mar-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	<QL	9.6	<QL	9.6	UG/L
10-Feb-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	5.7	9.6	9.0	9.6	UG/L
10-Jan-2013	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	7.0	9.6	7.0	9.6	UG/L
10-Dec-2012	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	4.0	9.6	4.0	9.6	UG/L
10-Nov-2012	001	COPPER, TOTAL RECOVERABLE	NULL	*********	NULL	*********	NULL	NULL	*********	3.0	9.6	3.0	9.6	UG/L

10-Oct-2012	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	3.6	9.6	3.5	9.6	UG/L
10-Sep-2012	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	3.6	9.6	3.5	9.6	UG/L
10-Aug-2012	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	3.10	9.6	3.10	9.6	UG/L
10-Jul-2012	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	5.0	9.6	5.0	9.6	UG/L
10-Jun-2012	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	<QL	9.6	<QL	9.6	UG/L
10-May-2012	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	4.88	9.6	4.88	9.6	UG/L
10-Apr-2012	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	4.24	9.6	4.24	9.6	UG/L
10-Mar-2012	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	4.99	9.6	4.99	9.6	UG/L
10-Feb-2012	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	5.0	9.6	5.0	9.6	UG/L
10-Jan-2012	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	<5.0	9.6	<5.0	9.6	UG/L
10-Dec-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	<5.0	9.6	<5.0	9.6	UG/L
10-Nov-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	<5.0	9.6	<5.0	9.6	UG/L
10-Oct-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	<5.0	9.6	<5.0	9.6	UG/L
10-Sep-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	6.0	10	6.0	10	UG/L
10-Aug-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	<5.0	10	<5.0	10	UG/L
10-Jul-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	<5.0	10	<5.0	10	UG/L
10-Jun-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	6.0	10	6.0	10	UG/L
10-May-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	5.0	10	5.0	10	UG/L
10-Apr-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	9.0	10	9.0	10	UG/L
10-Mar-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	5.0	10	5.0	10	UG/L
10-Feb-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	5.0	10	5.0	10	UG/L
10-Jan-2011	001	COPPER, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	5.0	10	5.0	10	UG/L
10-Jan-2016	001	DO	NULL	********	NULL	********	NULL	8.8	6.0	NULL	********	NULL	********	MG/L
10-Dec-2015	001	DO	NULL	********	NULL	********	NULL	8.9	6.0	NULL	********	NULL	********	MG/L
10-Nov-2015	001	DO	NULL	********	NULL	********	NULL	8.3	6.0	NULL	********	NULL	********	MG/L
10-Oct-2015	001	DO	NULL	********	NULL	********	NULL	8.1	6.0	NULL	********	NULL	********	MG/L
10-Sep-2015	001	DO	NULL	********	NULL	********	NULL	8.1	6.0	NULL	********	NULL	********	MG/L
10-Aug-2015	001	DO	NULL	********	NULL	********	NULL	8.0	6.0	NULL	********	NULL	********	MG/L
10-Jul-2015	001	DO	NULL	********	NULL	********	NULL	8.1	6.0	NULL	********	NULL	********	MG/L
10-Jun-2015	001	DO	NULL	********	NULL	********	NULL	8.6	6.0	NULL	********	NULL	********	MG/L
10-May-2015	001	DO	NULL	********	NULL	********	NULL	9.5	6.0	NULL	********	NULL	********	MG/L
10-Apr-2015	001	DO	NULL	********	NULL	********	NULL	10.0	6.0	NULL	********	NULL	********	MG/L
10-Mar-2015	001	DO	NULL	********	NULL	********	NULL	10.0	6.0	NULL	********	NULL	********	MG/L
10-Feb-2015	001	DO	NULL	********	NULL	********	NULL	9.8	6.0	NULL	********	NULL	********	MG/L
10-Jan-2015	001	DO	NULL	********	NULL	********	NULL	9.0	6.0	NULL	********	NULL	********	MG/L
10-Dec-2014	001	DO	NULL	********	NULL	********	NULL	9.2	6.0	NULL	********	NULL	********	MG/L
10-Nov-2014	001	DO	NULL	********	NULL	********	NULL	8.7	6.0	NULL	********	NULL	********	MG/L
10-Oct-2014	001	DO	NULL	********	NULL	********	NULL	8.2	6.0	NULL	********	NULL	********	MG/L
10-Sep-2014	001	DO	NULL	********	NULL	********	NULL	8.3	6.0	NULL	********	NULL	********	MG/L
10-Aug-2014	001	DO	NULL	********	NULL	********	NULL	8.2	6.0	NULL	********	NULL	********	MG/L
10-Jul-2014	001	DO	NULL	********	NULL	********	NULL	8.4	6.0	NULL	********	NULL	********	MG/L
10-Jun-2014	001	DO	NULL	********	NULL	********	NULL	7.8	6.0	NULL	********	NULL	********	MG/L
10-May-2014	001	DO	NULL	********	NULL	********	NULL	9.2	6.0	NULL	********	NULL	********	MG/L
10-Apr-2014	001	DO	NULL	********	NULL	********	NULL	9.4	6.0	NULL	********	NULL	********	MG/L
10-Mar-2014	001	DO	NULL	********	NULL	********	NULL	8.1	6.0	NULL	********	NULL	********	MG/L
10-Feb-2014	001	DO	NULL	********	NULL	********	NULL	9.4	6.0	NULL	********	NULL	********	MG/L
10-Jan-2014	001	DO	NULL	********	NULL	********	NULL	8.6	6.0	NULL	********	NULL	********	MG/L
10-Dec-2013	001	DO	NULL	********	NULL	********	NULL	8.8	6.0	NULL	********	NULL	********	MG/L
10-Nov-2013	001	DO	NULL	********	NULL	********	NULL	8.6	6.0	NULL	********	NULL	********	MG/L
10-Oct-2013	001	DO	NULL	********	NULL	********	NULL	8.4	6.0	NULL	********	NULL	********	MG/L
10-Sep-2013	001	DO	NULL	********	NULL	********	NULL	8.3	6.0	NULL	********	NULL	********	MG/L
10-Aug-2013	001	DO	NULL	********	NULL	********	NULL	8.2	6.0	NULL	********	NULL	********	MG/L
10-Jul-2013	001	DO	NULL	********	NULL	********	NULL	8.4	6.0	NULL	********	NULL	********	MG/L
10-Jun-2013	001	DO	NULL	********	NULL	********	NULL	8.8	6.0	NULL	********	NULL	********	MG/L
10-May-2013	001	DO	NULL	********	NULL	********	NULL	9.5	6.0	NULL	********	NULL	********	MG/L
10-Apr-2013	001	DO	NULL	********	NULL	********	NULL	9.6	6.0	NULL	********	NULL	********	MG/L
10-Mar-2013	001	DO	NULL	********	NULL	********	NULL	9.4	6.0	NULL	********	NULL	********	MG/L
10-Feb-2013	001	DO	NULL	********	NULL	********	NULL	9.2	6.0	NULL	********	NULL	********	MG/L
10-Jan-2013	001	DO	NULL	********	NULL	********	NULL	9.2	6.0	NULL	********	NULL	********	MG/L
10-Dec-2012	001	DO	NULL	********	NULL	********	NULL	9.1	6.0	NULL	********	NULL	********	MG/L
10-Nov-2012	001	DO	NULL	********	NULL	********	NULL	8.5	6.0	NULL	********	NULL	********	MG/L
10-Oct-2012	001	DO	NULL	********	NULL	********	NULL	7.5	6.0	NULL	********	NULL	********	MG/L
10-Sep-2012	001	DO	NULL	********	NULL	********	NULL	7.6	6.0	NULL	********	NULL	********	MG/L
10-Aug-2012	001	DO	NULL	********	NULL	********	NULL	8.1	6.0	NULL	********	NULL	********	MG/L
10-Jul-2012	001	DO	NULL	********	NULL	********	NULL	7.3	6.0	NULL	********	NULL	********	MG/L
10-Jun-2012	001	DO	NULL	********	NULL	********	NULL	8.1	6.0	NULL	********	NULL	********	MG/L
10-May-2012	001	DO	NULL	********	NULL	********	NULL	9.1	6.0	NULL	********	NULL	********	MG/L

10-Apr-2012	001	DO	NULL	********	NULL	********	NULL	9.2	6.0	NULL	********	NULL	********	MG/L
10-Mar-2012	001	DO	NULL	********	NULL	********	NULL	9.6	6.0	NULL	********	NULL	********	MG/L
10-Feb-2012	001	DO	NULL	********	NULL	********	NULL	9.2	6.0	NULL	********	NULL	********	MG/L
10-Jan-2012	001	DO	NULL	********	NULL	********	NULL	9.2	6.0	NULL	********	NULL	********	MG/L
10-Dec-2011	001	DO	NULL	********	NULL	********	NULL	9.1	6.0	NULL	********	NULL	********	MG/L
10-Nov-2011	001	DO	NULL	********	NULL	********	NULL	7.9	6.0	NULL	********	NULL	********	MG/L
10-Oct-2011	001	DO	NULL	********	NULL	********	NULL	7.6	6.0	NULL	********	NULL	********	MG/L
10-Sep-2011	001	DO	NULL	********	NULL	********	NULL	7.2	6.0	NULL	********	NULL	********	MG/L
10-Aug-2011	001	DO	NULL	********	NULL	********	NULL	7.3	6.0	NULL	********	NULL	********	MG/L
10-Jul-2011	001	DO	NULL	********	NULL	********	NULL	7.5	6.0	NULL	********	NULL	********	MG/L
10-Jun-2011	001	DO	NULL	********	NULL	********	NULL	8.3	6.0	NULL	********	NULL	********	MG/L
10-May-2011	001	DO	NULL	********	NULL	********	NULL	9.0	6.0	NULL	********	NULL	********	MG/L
10-Apr-2011	001	DO	NULL	********	NULL	********	NULL	9.9	6.0	NULL	********	NULL	********	MG/L
10-Mar-2011	001	DO	NULL	********	NULL	********	NULL	10.0	6.0	NULL	********	NULL	********	MG/L
10-Feb-2011	001	DO	NULL	********	NULL	********	NULL	10.1	6.0	NULL	********	NULL	********	MG/L
10-Jan-2011	001	DO	NULL	********	NULL	********	NULL	9.6	6.0	NULL	********	NULL	********	MG/L
10-Jan-2016	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.3	126	NULL	********	N/CML
10-Dec-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.2	126	NULL	********	N/CML
10-Nov-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Oct-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Sep-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Aug-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Jul-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Jun-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.2	126	NULL	********	N/CML
10-May-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.4	126	NULL	********	N/CML
10-Apr-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Mar-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Feb-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Jan-2015	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Dec-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Nov-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Oct-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.3	126	NULL	********	N/CML
10-Sep-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Aug-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Jul-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.2	126	NULL	********	N/CML
10-Jun-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-May-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Apr-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Mar-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Feb-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Jan-2014	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Dec-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Nov-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Oct-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Sep-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Aug-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Jul-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Jun-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-May-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Apr-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Mar-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Feb-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Jan-2013	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Dec-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Nov-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Oct-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Sep-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Aug-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Jul-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Jun-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-May-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Apr-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Mar-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Feb-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Jan-2012	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Dec-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Nov-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.2	126	NULL	********	N/CML
10-Oct-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Sep-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Aug-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Jul-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Jun-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-May-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.1	126	NULL	********	N/CML
10-Apr-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.0	126	NULL	********	N/CML
10-Mar-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	4.9	126	NULL	********	N/CML
10-Feb-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.9	126	NULL	********	N/CML
10-Jan-2011	001	E.COLI	NULL	********	NULL	********	NULL	NULL	********	1.3	126	NULL	********	N/CML
10-Jan-2016	001	FLOW	1.010	3.0	1.474	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Dec-2015	001	FLOW	0.854	3.0	1.216	NL	MGD	NULL	********	NULL	********	NULL	********	NULL

10-Nov-2015	001	FLOW	1.015	3.0	2.229	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Oct-2015	001	FLOW	0.696	3.0	1.309	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Sep-2015	001	FLOW	0.687	3.0	0.834	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Aug-2015	001	FLOW	0.902	3.0	1.331	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jul-2015	001	FLOW	1.021	3.0	2.030	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jun-2015	001	FLOW	0.926	3.0	1.169	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-May-2015	001	FLOW	1.147	3.0	2.817	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Apr-2015	001	FLOW	1.102	3.0	1.673	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Mar-2015	001	FLOW	0.782	3.0	0.964	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Feb-2015	001	FLOW	0.818	3.0	1.274	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jan-2015	001	FLOW	0.785	3.0	1.491	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Dec-2014	001	FLOW	0.667	3.0	1.300	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Nov-2014	001	FLOW	0.735	3.0	1.560	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Oct-2014	001	FLOW	.584	3.0	1.147	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Sep-2014	001	FLOW	0.671	3.0	1.035	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Aug-2014	001	FLOW	0.823	3.0	1.493	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jul-2014	001	FLOW	1.081	3.0	1.476	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jun-2014	001	FLOW	1.673	3.0	4.377	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-May-2014	001	FLOW	1.515	3.0	4.096	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Apr-2014	001	FLOW	1.364	3.0	2.858	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Mar-2014	001	FLOW	1.362	3.0	2.060	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Feb-2014	001	FLOW	1.253	3.0	2.238	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jan-2014	001	FLOW	1.168	3.0	2.576	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Dec-2013	001	FLOW	0.790	3.0	2.043	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Nov-2013	001	FLOW	0.883	3.0	1.385	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Oct-2013	001	FLOW	0.864	3.0	1.305	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Sep-2013	001	FLOW	1.173	3.0	2.400	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Aug-2013	001	FLOW	1.246	3.0	2.141	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jul-2013	001	FLOW	1.417	3.0	3.044	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jun-2013	001	FLOW	1.209	3.0	2.539	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-May-2013	001	FLOW	1.029	3.0	1.286	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Apr-2013	001	FLOW	1.314	3.0	2.407	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Mar-2013	001	FLOW	0.958	3.0	1.541	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Feb-2013	001	FLOW	0.893	3.0	2.554	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jan-2013	001	FLOW	.723	3.0	1.209	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Dec-2012	001	FLOW	0.755	3.0	1.151	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Nov-2012	001	FLOW	0.920	3.0	1.909	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Oct-2012	001	FLOW	.768	3.0	1.319	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Sep-2012	001	FLOW	0.855	3.0	1.886	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Aug-2012	001	FLOW	0.693	3.0	1.078	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jul-2012	001	FLOW	0.738	3.0	0.973	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jun-2012	001	FLOW	.766	3.0	1.420	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-May-2012	001	FLOW	0.764	3.0	1.011	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Apr-2012	001	FLOW	.875	3.0	1.205	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Mar-2012	001	FLOW	1.228	3.0	0.862	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Feb-2012	001	FLOW	0.899	3.0	1.538	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jan-2012	001	FLOW	1.164	3.0	3.440	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Dec-2011	001	FLOW	.934	3.0	1.925	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Nov-2011	001	FLOW	1.203	3.0	3.036	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Oct-2011	001	FLOW	1.201	3.0	3.37	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Sep-2011	001	FLOW	0.795	3.0	1.384	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Aug-2011	001	FLOW	0.713	3.0	1.047	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jul-2011	001	FLOW	0.646	3.0	1.218	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jun-2011	001	FLOW	0.871	3.0	1.812	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-May-2011	001	FLOW	0.844	3.0	1.136	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Apr-2011	001	FLOW	0.996	3.0	2.881	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Mar-2011	001	FLOW	0.600	3.0	1.286	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Feb-2011	001	FLOW	0.520	3.0	1.133	NL	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jan-2011	001	FLOW, MAY-DEC	0.51	NL	0.79	NA	MGD	NULL	********	NULL	********	NULL	********	NULL
10-Jan-2016	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	168	NL	MG/L
10-Oct-2015	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	160	NL	MG/L
10-Jul-2015	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	152	NL	MG/L
10-Apr-2015	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	140	NL	MG/L
10-Jan-2015	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	126	NL	MG/L
10-Oct-2014	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	160	NL	MG/L
10-Jul-2014	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	144	NL	MG/L
10-Apr-2014	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	80	NL	MG/L
10-Jan-2014	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	107	NL	MG/L
10-Oct-2013	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	84	NL	MG/L
10-Jul-2013	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	96	NL	MG/L
10-Apr-2013	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	147	NL	MG/L
10-Jan-2013	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	88	NL	MG/L
10-Oct-2012	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	85	NL	MG/L
10-Jul-2012	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	113.7	NL	MG/L
10-Apr-2012	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	96	NL	MG/L
10-Jan-2012	001	HARDNESS, TOTAL (AS CACO3)	NULL	********	NULL	********	NULL	NULL	********	NULL	********	107	NL	MG/L
10-Jan-2016	001	NITRITE+NITRATE-N,TOTAL	NULL	********	NULL	********	NULL	NULL	********	0.42	NL	NULL	********	MG/L
10-Dec-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	********	NULL	********	NULL	NULL	********	0.78	NL	NULL	********	MG/L

10-Nov-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.8	NL	NULL	**********	MG/L
10-Oct-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.91	NL	NULL	**********	MG/L
10-Sep-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.83	NL	NULL	**********	MG/L
10-Aug-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.40	NL	NULL	**********	MG/L
10-Jul-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.05	NL	NULL	**********	MG/L
10-Jun-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.85	NL	NULL	**********	MG/L
10-May-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.61	NL	NULL	**********	MG/L
10-Apr-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.63	NL	NULL	**********	MG/L
10-Mar-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.54	NL	NULL	**********	MG/L
10-Feb-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.09	NL	NULL	**********	MG/L
10-Jan-2015	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.65	NL	NULL	**********	MG/L
10-Dec-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.45	NL	NULL	**********	MG/L
10-Nov-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.96	NL	NULL	**********	MG/L
10-Oct-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.79	NL	NULL	**********	MG/L
10-Sep-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.44	NL	NULL	**********	MG/L
10-Aug-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.79	NL	NULL	**********	MG/L
10-Jul-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.50	NL	NULL	**********	MG/L
10-Jun-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.39	NL	NULL	**********	MG/L
10-May-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.19	NL	NULL	**********	MG/L
10-Apr-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.4	NL	NULL	**********	MG/L
10-Mar-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.41	NL	NULL	**********	MG/L
10-Feb-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.62	NL	NULL	**********	MG/L
10-Jan-2014	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.90	NL	NULL	**********	MG/L
10-Dec-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Nov-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.86	NL	NULL	**********	MG/L
10-Oct-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.2	NL	NULL	**********	MG/L
10-Sep-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.28	NL	NULL	**********	MG/L
10-Aug-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.36	NL	NULL	**********	MG/L
10-Jul-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	.97	NL	NULL	**********	MG/L
10-Jun-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.60	NL	NULL	**********	MG/L
10-May-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.22	NL	NULL	**********	MG/L
10-Apr-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.48	NL	NULL	**********	MG/L
10-Mar-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.3	NL	NULL	**********	MG/L
10-Feb-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.98	NL	NULL	**********	MG/L
10-Jan-2013	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.1	NL	NULL	**********	MG/L
10-Dec-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.45	NL	NULL	**********	MG/L
10-Nov-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.53	NL	NULL	**********	MG/L
10-Oct-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.15	NL	NULL	**********	MG/L
10-Sep-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	2.46	NL	NULL	**********	MG/L
10-Aug-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.63	NL	NULL	**********	MG/L
10-Jul-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.73	NL	NULL	**********	MG/L
10-Jun-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	.86	NL	NULL	**********	MG/L
10-May-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	2.33	NL	NULL	**********	MG/L
10-Apr-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.95	NL	NULL	**********	MG/L
10-Mar-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	2.08	NL	NULL	**********	MG/L
10-Feb-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.98	NL	NULL	**********	MG/L
10-Jan-2012	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.82	NL	NULL	**********	MG/L
10-Dec-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.77	NL	NULL	**********	MG/L
10-Nov-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.51	NL	NULL	**********	MG/L
10-Oct-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.72	NL	NULL	**********	MG/L
10-Sep-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.3	NL	NULL	**********	MG/L
10-Aug-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.4	NL	NULL	**********	MG/L
10-Jul-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.1	NL	NULL	**********	MG/L
10-Jun-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	1.9	NL	NULL	**********	MG/L
10-May-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	4.2	NL	NULL	**********	MG/L
10-Apr-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	9.4	NL	NULL	**********	MG/L
10-Mar-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.3	NL	NULL	**********	MG/L
10-Feb-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	0.9	NL	NULL	**********	MG/L
10-Jan-2011	001	NITRITE+NITRATE-N,TOTAL	NULL	**********	NULL	**********	NULL	NULL	**********	3.2	NL	NULL	**********	MG/L
10-Jan-2016	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.47	NL	NULL	**********	MG/L
10-Dec-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.21	NL	NULL	**********	MG/L
10-Nov-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.64	NL	NULL	**********	MG/L
10-Oct-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.98	NL	NULL	**********	MG/L
10-Sep-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.94	NL	NULL	**********	MG/L
10-Aug-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.26	NL	NULL	**********	MG/L
10-Jul-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.17	NL	NULL	**********	MG/L
10-Jun-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.10	NL	NULL	**********	MG/L
10-May-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.86	NL	NULL	**********	MG/L
10-Apr-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	3.65	NL	NULL	**********	MG/L
10-Mar-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.34	NL	NULL	**********	MG/L
10-Feb-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.52	NL	NULL	**********	MG/L
10-Jan-2015	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.41	NL	NULL	**********	MG/L
10-Dec-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.36	NL	NULL	**********	MG/L
10-Nov-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.36	NL	NULL	**********	MG/L
10-Oct-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.37	NL	NULL	**********	MG/L
10-Sep-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.94	NL	NULL	**********	MG/L
10-Aug-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.52	NL	NULL	**********	MG/L
10-Jul-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.46	NL	NULL	**********	MG/L
10-Jun-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.92	NL	NULL	**********	MG/L

10-May-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.77	NL	NULL	**********	MG/L
10-Apr-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.99	NL	NULL	**********	MG/L
10-Mar-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	3.74	NL	NULL	**********	MG/L
10-Feb-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.87	NL	NULL	**********	MG/L
10-Jan-2014	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.72	NL	NULL	**********	MG/L
10-Dec-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	0.95	NL	NULL	**********	MG/L
10-Nov-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.38	NL	NULL	**********	MG/L
10-Oct-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.84	NL	NULL	**********	MG/L
10-Sep-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.43	NL	NULL	**********	MG/L
10-Aug-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.7	NL	NULL	**********	MG/L
10-Jul-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.27	NL	NULL	**********	MG/L
10-Jun-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.86	NL	NULL	**********	MG/L
10-May-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.40	NL	NULL	**********	MG/L
10-Apr-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.1	NL	NULL	**********	MG/L
10-Mar-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	3.4	NL	NULL	**********	MG/L
10-Feb-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	4.74	NL	NULL	**********	MG/L
10-Jan-2013	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.6	NL	NULL	**********	MG/L
10-Dec-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.93	NL	NULL	**********	MG/L
10-Nov-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.63	NL	NULL	**********	MG/L
10-Oct-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.58	NL	NULL	**********	MG/L
10-Sep-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	3.02	NL	NULL	**********	MG/L
10-Aug-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.20	NL	NULL	**********	MG/L
10-Jul-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.17	NL	NULL	**********	MG/L
10-Jun-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.38	NL	NULL	**********	MG/L
10-May-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	4.40	NL	NULL	**********	MG/L
10-Apr-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	4.38	NL	NULL	**********	MG/L
10-Mar-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	4.03	NL	NULL	**********	MG/L
10-Feb-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.58	NL	NULL	**********	MG/L
10-Jan-2012	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.87	NL	NULL	**********	MG/L
10-Dec-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.14	NL	NULL	**********	MG/L
10-Nov-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.84	NL	NULL	**********	MG/L
10-Oct-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.2	NL	NULL	**********	MG/L
10-Sep-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.9	NL	NULL	**********	MG/L
10-Aug-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	1.5	NL	NULL	**********	MG/L
10-Jul-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	2.5	NL	NULL	**********	MG/L
10-Jun-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	3.9	NL	NULL	**********	MG/L
10-May-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	6.0	NL	NULL	**********	MG/L
10-Apr-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	15.3	NL	NULL	**********	MG/L
10-Mar-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	6.3	NL	NULL	**********	MG/L
10-Feb-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	8.2	NL	NULL	**********	MG/L
10-Jan-2011	001	NITROGEN, TOTAL (AS N)	NULL	**********	NULL	**********	NULL	NULL	**********	5.1	NL	NULL	**********	MG/L
10-Jan-2016	001	NITROGEN, TOTAL (AS N) (CALENDAR YEAR)	NULL	**********	NULL	**********	NULL	NULL	**********	2.18	4.0	NULL	**********	MG/L
10-Jan-2015	001	NITROGEN, TOTAL (AS N) (CALENDAR YEAR)	NULL	**********	NULL	**********	NULL	NULL	**********	2.39	4.0	NULL	**********	MG/L
10-Jan-2014	001	NITROGEN, TOTAL (AS N) (CALENDAR YEAR)	NULL	**********	NULL	**********	NULL	NULL	**********	2.39	4.0	NULL	**********	MG/L
10-Jan-2013	001	NITROGEN, TOTAL (AS N) (CALENDAR YEAR)	NULL	**********	NULL	**********	NULL	NULL	**********	2.49	4.0	NULL	**********	MG/L
10-Jan-2012	001	NITROGEN, TOTAL (AS N) (CALENDAR YEAR)	NULL	**********	NULL	**********	NULL	NULL	**********	4.47	4.0	NULL	**********	MG/L
10-Jan-2016	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.18	NL	NULL	**********	MG/L
10-Dec-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.24	NL	NULL	**********	MG/L
10-Nov-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.25	NL	NULL	**********	MG/L
10-Oct-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.20	NL	NULL	**********	MG/L
10-Sep-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.23	NL	NULL	**********	MG/L
10-Aug-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.27	NL	NULL	**********	MG/L
10-Jul-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.44	NL	NULL	**********	MG/L
10-Jun-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.49	NL	NULL	**********	MG/L
10-May-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.59	NL	NULL	**********	MG/L
10-Apr-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.84	NL	NULL	**********	MG/L
10-Mar-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.43	NL	NULL	**********	MG/L
10-Feb-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.52	NL	NULL	**********	MG/L
10-Jan-2015	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.39	NL	NULL	**********	MG/L
10-Dec-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.39	NL	NULL	**********	MG/L
10-Nov-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.39	NL	NULL	**********	MG/L
10-Oct-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.40	NL	NULL	**********	MG/L
10-Sep-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.40	NL	NULL	**********	MG/L
10-Aug-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.47	NL	NULL	**********	MG/L
10-Jul-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.63	NL	NULL	**********	MG/L
10-Jun-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.86	NL	NULL	**********	MG/L
10-May-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.84	NL	NULL	**********	MG/L

10-Apr-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.87	NL	NULL	**********	MG/L
10-Mar-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.81	NL	NULL	**********	MG/L
10-Feb-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	1.87	NL	NULL	**********	MG/L
10-Jan-2014	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.39	NL	NULL	**********	MG/L
10-Dec-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.45	NL	NULL	**********	MG/L
10-Nov-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.60	NL	NULL	**********	MG/L
10-Oct-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.63	NL	NULL	**********	MG/L
10-Sep-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.60	NL	NULL	**********	MG/L
10-Aug-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.63	NL	NULL	**********	MG/L
10-Jul-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.79	NL	NULL	**********	MG/L
10-Jun-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.89	NL	NULL	**********	MG/L
10-May-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	3.15	NL	NULL	**********	MG/L
10-Apr-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	3.40	NL	NULL	**********	MG/L
10-Mar-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	4.07	NL	NULL	**********	MG/L
10-Feb-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	4.74	NL	NULL	**********	MG/L
10-Jan-2013	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.49	NL	NULL	**********	MG/L
10-Dec-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.48	NL	NULL	**********	MG/L
10-Nov-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.44	NL	NULL	**********	MG/L
10-Oct-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.53	NL	NULL	**********	MG/L
10-Sep-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.65	NL	NULL	**********	MG/L
10-Aug-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.59	NL	NULL	**********	MG/L
10-Jul-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	1.17	NL	NULL	**********	MG/L
10-Jun-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	3.15	NL	NULL	**********	MG/L
10-May-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	3.60	NL	NULL	**********	MG/L
10-Apr-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	3.33	NL	NULL	**********	MG/L
10-Mar-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	2.80	NL	NULL	**********	MG/L
10-Feb-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	1.58	NL	NULL	**********	MG/L
10-Jan-2012	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	4.47	NL	NULL	**********	MG/L
10-Dec-2011	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	4.71	NL	NULL	**********	MG/L
10-Nov-2011	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	4.97	NL	NULL	**********	MG/L
10-Oct-2011	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	5.31	NL	NULL	**********	MG/L
10-Sep-2011	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	5.7	NL	NULL	**********	MG/L
10-Aug-2011	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	6.3	NL	NULL	**********	MG/L
10-Jul-2011	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	7.0	NL	NULL	**********	MG/L
10-Jun-2011	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	7.9	NL	NULL	**********	MG/L
10-May-2011	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	8.9	NL	NULL	**********	MG/L
10-Apr-2011	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	9.9	NL	NULL	**********	MG/L
10-Mar-2011	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	7.2	NL	NULL	**********	MG/L
10-Feb-2011	001	NITROGEN, TOTAL (AS N) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	8.2	NL	NULL	**********	MG/L
10-Jan-2016	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	7.9	9.0	SU
10-Dec-2015	001	pH	NULL	**********	NULL	**********	NULL	7.5	6.0	NULL	**********	8.2	9.0	SU
10-Nov-2015	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	7.8	9.0	SU
10-Oct-2015	001	pH	NULL	**********	NULL	**********	NULL	7.4	6.0	NULL	**********	7.8	9.0	SU
10-Sep-2015	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	7.8	9.0	SU
10-Aug-2015	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	7.9	9.0	SU
10-Jul-2015	001	pH	NULL	**********	NULL	**********	NULL	7.5	6.0	NULL	**********	7.8	9.0	SU
10-Jun-2015	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	7.9	9.0	SU
10-May-2015	001	pH	NULL	**********	NULL	**********	NULL	7.4	6.0	NULL	**********	7.9	9.0	SU
10-Apr-2015	001	pH	NULL	**********	NULL	**********	NULL	6.9	6.0	NULL	**********	7.9	9.0	SU
10-Mar-2015	001	pH	NULL	**********	NULL	**********	NULL	7.4	6.0	NULL	**********	7.9	9.0	SU
10-Feb-2015	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	8.2	9.0	SU
10-Jan-2015	001	pH	NULL	**********	NULL	**********	NULL	7.0	6.0	NULL	**********	7.9	9.0	SU
10-Dec-2014	001	pH	NULL	**********	NULL	**********	NULL	7.6	6.0	NULL	**********	7.9	9.0	SU
10-Nov-2014	001	pH	NULL	**********	NULL	**********	NULL	7.5	6.0	NULL	**********	7.9	9.0	SU
10-Oct-2014	001	pH	NULL	**********	NULL	**********	NULL	7.5	6.0	NULL	**********	8.1	9.0	SU
10-Sep-2014	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	8.1	9.0	SU

10-Aug-2014	001	pH	NULL	**********	NULL	**********	NULL	7.5	6.0	NULL	**********	7.9	9.0	SU
10-Jul-2014	001	pH	NULL	**********	NULL	**********	NULL	7.5	6.0	NULL	**********	7.9	9.0	SU
10-Jun-2014	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	7.9	9.0	SU
10-May-2014	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	7.8	9.0	SU
10-Apr-2014	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	7.7	9.0	SU
10-Mar-2014	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	7.7	9.0	SU
10-Feb-2014	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	7.9	9.0	SU
10-Jan-2014	001	pH	NULL	**********	NULL	**********	NULL	7.5	6.0	NULL	**********	7.9	9.0	SU
10-Dec-2013	001	pH	NULL	**********	NULL	**********	NULL	7.6	6.0	NULL	**********	8.1	9.0	SU
10-Nov-2013	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	8.2	9.0	SU
10-Oct-2013	001	pH	NULL	**********	NULL	**********	NULL	7.4	6.0	NULL	**********	8.5	9.0	SU
10-Sep-2013	001	pH	NULL	**********	NULL	**********	NULL	7.1	6.0	NULL	**********	8.2	9.0	SU
10-Aug-2013	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	8.3	9.0	SU
10-Jul-2013	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	8.2	9.0	SU
10-Jun-2013	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	8.2	9.0	SU
10-May-2013	001	pH	NULL	**********	NULL	**********	NULL	7.4	6.0	NULL	**********	8.5	9.0	SU
10-Apr-2013	001	pH	NULL	**********	NULL	**********	NULL	7.4	6.0	NULL	**********	8.6	9.0	SU
10-Mar-2013	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	8.0	9.0	SU
10-Feb-2013	001	pH	NULL	**********	NULL	**********	NULL	7.4	6.0	NULL	**********	8.8	9.0	SU
10-Jan-2013	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	8.9	9.0	SU
10-Dec-2012	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	8.7	9.0	SU
10-Nov-2012	001	pH	NULL	**********	NULL	**********	NULL	7.4	6.0	NULL	**********	8.6	9.0	SU
10-Oct-2012	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	8.4	9.0	SU
10-Sep-2012	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	8.6	9.0	SU
10-Aug-2012	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	8.2	9.0	SU
10-Jul-2012	001	pH	NULL	**********	NULL	**********	NULL	7.5	6.0	NULL	**********	8.5	9.0	SU
10-Jun-2012	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	8.7	9.0	SU
10-May-2012	001	pH	NULL	**********	NULL	**********	NULL	7.4	6.0	NULL	**********	8.4	9.0	SU
10-Apr-2012	001	pH	NULL	**********	NULL	**********	NULL	7.1	6.0	NULL	**********	8.2	9.0	SU
10-Mar-2012	001	pH	NULL	**********	NULL	**********	NULL	7.0	6.0	NULL	**********	8.0	9.0	SU
10-Feb-2012	001	pH	NULL	**********	NULL	**********	NULL	7.5	6.0	NULL	**********	8.0	9.0	SU
10-Jan-2012	001	pH	NULL	**********	NULL	**********	NULL	7.4	6.0	NULL	**********	7.9	9.0	SU
10-Dec-2011	001	pH	NULL	**********	NULL	**********	NULL	7.5	6.0	NULL	**********	8.5	9.0	SU
10-Nov-2011	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	8.0	9.0	SU
10-Oct-2011	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	8.7	9.0	SU
10-Sep-2011	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	8.0	9.0	SU
10-Aug-2011	001	pH	NULL	**********	NULL	**********	NULL	7.1	6.0	NULL	**********	8.0	9.0	SU
10-Jul-2011	001	pH	NULL	**********	NULL	**********	NULL	4.6	6.0	NULL	**********	8.0	9.0	SU
10-Jun-2011	001	pH	NULL	**********	NULL	**********	NULL	7.4	6.0	NULL	**********	8.2	9.0	SU
10-May-2011	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	7.9	9.0	SU
10-Apr-2011	001	pH	NULL	**********	NULL	**********	NULL	7.2	6.0	NULL	**********	7.8	9.0	SU
10-Mar-2011	001	pH	NULL	**********	NULL	**********	NULL	6.9	6.0	NULL	**********	7.6	9.0	SU
10-Feb-2011	001	pH	NULL	**********	NULL	**********	NULL	7.1	6.0	NULL	**********	8.0	9.0	SU
10-Jan-2011	001	pH	NULL	**********	NULL	**********	NULL	7.3	6.0	NULL	**********	8.2	9.0	SU
10-Jan-2016	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.06	NL	NULL	**********	MG/L
10-Dec-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.11	NL	NULL	**********	MG/L
10-Nov-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Oct-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.14	NL	NULL	**********	MG/L
10-Sep-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.10	NL	NULL	**********	MG/L
10-Aug-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.19	NL	NULL	**********	MG/L
10-Jul-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.17	NL	NULL	**********	MG/L
10-Jun-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.19	NL	NULL	**********	MG/L
10-May-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Apr-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Mar-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Feb-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Jan-2015	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.13	NL	NULL	**********	MG/L
10-Dec-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.10	NL	NULL	**********	MG/L
10-Nov-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.21	NL	NULL	**********	MG/L
10-Oct-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Sep-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.31	NL	NULL	**********	MG/L
10-Aug-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Jul-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Jun-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.21	NL	NULL	**********	MG/L
10-May-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.14	NL	NULL	**********	MG/L
10-Apr-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.20	NL	NULL	**********	MG/L
10-Mar-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.18	NL	NULL	**********	MG/L
10-Feb-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Jan-2014	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.13	NL	NULL	**********	MG/L
10-Dec-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Nov-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Oct-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.11	NL	NULL	**********	MG/L
10-Sep-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	.16	NL	NULL	**********	MG/L
10-Aug-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Jul-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	.19	NL	NULL	**********	MG/L
10-Jun-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.13	NL	NULL	**********	MG/L
10-May-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.13	NL	NULL	**********	MG/L
10-Apr-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.14	NL	NULL	**********	MG/L
10-Mar-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.12	NL	NULL	**********	MG/L
10-Feb-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.13	NL	NULL	**********	MG/L

10-Jan-2013	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.12	NL	NULL	**********	MG/L
10-Dec-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.07	NL	NULL	**********	MG/L
10-Nov-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.13	NL	NULL	**********	MG/L
10-Oct-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	.13	NL	NULL	**********	MG/L
10-Sep-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Aug-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.23	NL	NULL	**********	MG/L
10-Jul-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.18	NL	NULL	**********	MG/L
10-Jun-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.14	NL	NULL	**********	MG/L
10-May-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.17	NL	NULL	**********	MG/L
10-Apr-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.13	NL	NULL	**********	MG/L
10-Mar-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.07	NL	NULL	**********	MG/L
10-Feb-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.05	NL	NULL	**********	MG/L
10-Jan-2012	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.11	NL	NULL	**********	MG/L
10-Dec-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.04	NL	NULL	**********	MG/L
10-Nov-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.08	NL	NULL	**********	MG/L
10-Oct-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.05	NL	NULL	**********	MG/L
10-Sep-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.1	NL	NULL	**********	MG/L
10-Aug-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.1	NL	NULL	**********	MG/L
10-Jul-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.1	NL	NULL	**********	MG/L
10-Jun-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.1	NL	NULL	**********	MG/L
10-May-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	01	NL	NULL	**********	MG/L
10-Apr-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.2	NL	NULL	**********	MG/L
10-Mar-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.1	NL	NULL	**********	MG/L
10-Feb-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.1	NL	NULL	**********	MG/L
10-Jan-2011	001	PHOSPHORUS, TOTAL (AS P)	NULL	**********	NULL	**********	NULL	NULL	**********	0.2	NL	NULL	**********	MG/L
10-Jan-2016	001	PHOSPHORUS, TOTAL (AS P) (CALENDAR YEAR)	NULL	**********	NULL	**********	NULL	NULL	**********	0.14	0.3	NULL	**********	MG/L
10-Jan-2015	001	PHOSPHORUS, TOTAL (AS P) (CALENDAR YEAR)	NULL	**********	NULL	**********	NULL	NULL	**********	0.18	0.3	NULL	**********	MG/L
10-Jan-2014	001	PHOSPHORUS, TOTAL (AS P) (CALENDAR YEAR)	NULL	**********	NULL	**********	NULL	NULL	**********	0.14	0.3	NULL	**********	MG/L
10-Jan-2013	001	PHOSPHORUS, TOTAL (AS P) (CALENDAR YEAR)	NULL	**********	NULL	**********	NULL	NULL	**********	0.13	0.3	NULL	**********	MG/L
10-Jan-2012	001	PHOSPHORUS, TOTAL (AS P) (CALENDAR YEAR)	NULL	**********	NULL	**********	NULL	NULL	**********	0.09	0.3	NULL	**********	MG/L
10-Jan-2016	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.14	NL	NULL	**********	MG/L
10-Dec-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Nov-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Oct-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Sep-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Aug-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Jul-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Jun-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-May-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Apr-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Mar-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Feb-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.15	NL	NULL	**********	MG/L
10-Jan-2015	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.18	NL	NULL	**********	MG/L
10-Dec-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.18	NL	NULL	**********	MG/L
10-Nov-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.19	NL	NULL	**********	MG/L
10-Oct-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.19	NL	NULL	**********	MG/L
10-Sep-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.19	NL	NULL	**********	MG/L
10-Aug-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.17	NL	NULL	**********	MG/L
10-Jul-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.17	NL	NULL	**********	MG/L
10-Jun-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.18	NL	NULL	**********	MG/L
10-May-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.17	NL	NULL	**********	MG/L
10-Apr-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.18	NL	NULL	**********	MG/L
10-Mar-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.17	NL	NULL	**********	MG/L
10-Feb-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.16	NL	NULL	**********	MG/L
10-Jan-2014	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.14	NL	NULL	**********	MG/L
10-Dec-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	**********	NULL	**********	NULL	NULL	**********	0.14	NL	NULL	**********	MG/L

10-Nov-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.14	NL	NULL	********	MG/L
10-Oct-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.14	NL	NULL	********	MG/L
10-Sep-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.14	NL	NULL	********	MG/L
10-Aug-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.14	NL	NULL	********	MG/L
10-Jul-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.14	NL	NULL	********	MG/L
10-Jun-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.13	NL	NULL	********	MG/L
10-May-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.13	NL	NULL	********	MG/L
10-Apr-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.13	NL	NULL	********	MG/L
10-Mar-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.13	NL	NULL	********	MG/L
10-Feb-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.13	NL	NULL	********	MG/L
10-Jan-2013	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.13	NL	NULL	********	MG/L
10-Dec-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.13	NL	NULL	********	MG/L
10-Nov-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.14	NL	NULL	********	MG/L
10-Oct-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.14	NL	NULL	********	MG/L
10-Sep-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.14	NL	NULL	********	MG/L
10-Aug-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.14	NL	NULL	********	MG/L
10-Jul-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.18	NL	NULL	********	MG/L
10-Jun-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	.11	NL	NULL	********	MG/L
10-May-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.11	NL	NULL	********	MG/L
10-Apr-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.08	NL	NULL	********	MG/L
10-Mar-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.06	NL	NULL	********	MG/L
10-Feb-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.05	NL	NULL	********	MG/L
10-Jan-2012	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.09	NL	NULL	********	MG/L
10-Dec-2011	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.09	NL	NULL	********	MG/L
10-Nov-2011	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.10	NL	NULL	********	MG/L
10-Oct-2011	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.10	NL	NULL	********	MG/L
10-Sep-2011	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.1	NL	NULL	********	MG/L
10-Aug-2011	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.1	NL	NULL	********	MG/L
10-Jul-2011	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.1	NL	NULL	********	MG/L
10-Jun-2011	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.1	NL	NULL	********	MG/L
10-May-2011	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.1	NL	NULL	********	MG/L
10-Apr-2011	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.1	NL	NULL	********	MG/L
10-Mar-2011	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.1	NL	NULL	********	MG/L
10-Feb-2011	001	PHOSPHORUS, TOTAL (AS P) (YEAR-TO-DATE)	NULL	********	NULL	********	NULL	NULL	********	0.1	NL	NULL	********	MG/L
10-Jan-2016	001	TKN (N-KJEL)	9.0	170	9.3	270	LBS/D	NULL	********	1.0	7.0	1.3	11	MG/L
10-Dec-2015	001	TKN (N-KJEL)	9.7	170	14.5	270	LBS/D	NULL	********	1.3	7.0	1.8	11	MG/L
10-Nov-2015	001	TKN (N-KJEL)	8.8	170	15.4	270	LBS/D	NULL	********	1.0	7.0	1.5	11	MG/L
10-Oct-2015	001	TKN (N-KJEL)	6.4	170	6.5	270	LBS/D	NULL	********	1.1	7.0	1.2	11	MG/L
10-Sep-2015	001	TKN (N-KJEL)	6.1	170	6.6	270	LBS/D	NULL	********	1.0	7.0	1.2	11	MG/L
10-Aug-2015	001	TKN (N-KJEL)	7.5	170	8.1	270	LBS/D	NULL	********	1.0	7.0	1.2	11	MG/L
10-Jul-2015	001	TKN (N-KJEL)	8.8	170	8.4	270	LBS/D	NULL	********	1.1	7.0	1.2	11	MG/L
10-Jun-2015	001	TKN (N-KJEL)	11.0	170	16.7	270	LBS/D	NULL	********	1.4	7.0	1.9	11	MG/L
10-May-2015	001	TKN (N-KJEL)	14.7	170	26.4	270	LBS/D	NULL	********	1.5	7.0	2.0	11	MG/L
10-Apr-2015	001	TKN (N-KJEL)	27.8	170	32.1	270	LBS/D	NULL	********	3.0	7.0	3.5	11	MG/L
10-Mar-2015	001	TKN (N-KJEL)	11.6	170	16.3	270	LBS/D	NULL	********	1.7	7.0	2.2	11	MG/L
10-Feb-2015	001	TKN (N-KJEL)	9.3	170	12.1	270	LBS/D	NULL	********	1.4	7.0	1.8	11	MG/L
10-Jan-2015	001	TKN (N-KJEL)	13.3	170	15.4	270	LBS/D	NULL	********	2.0	7.0	2.6	11	MG/L
10-Dec-2014	001	TKN (N-KJEL)	11.1	170	17.3	270	LBS/D	NULL	********	1.9	7.0	2.4	11	MG/L
10-Nov-2014	001	TKN (N-KJEL)	8.6	170	10.8	270	LBS/D	NULL	********	1.4	7.0	1.8	11	MG/L
10-Oct-2014	001	TKN (N-KJEL)	9.1	170	12.8	270	LBS/D	NULL	********	1.8	7.0	2.3	11	MG/L
10-Sep-2014	001	TKN (N-KJEL)	7.5	170	9.9	270	LBS/D	NULL	********	1.3	7.0	1.5	11	MG/L
10-Aug-2014	001	TKN (N-KJEL)	3.5	170	3.2	270	LBS/D	NULL	********	0.7	7.0	0.9	11	MG/L
10-Jul-2014	001	TKN (N-KJEL)	8.5	170	9.1	270	LBS/D	NULL	********	1.0	7.0	1.2	11	MG/L
10-Jun-2014	001	TKN (N-KJEL)	18.2	170	24.3	270	LBS/D	NULL	********	1.2	7.0	2.0	11	MG/L
10-May-2014	001	TKN (N-KJEL)	17.2	170	15.3	270	LBS/D	NULL	********	1.1	7.0	1.0	11	MG/L
10-Apr-2014	001	TKN (N-KJEL)	16.0	170	18.7	270	LBS/D	NULL	********	1.4	7.0	1.8	11	MG/L

10-Mar-2014	001	TKN (N-KJEL)	25.3	170	31.1	270	LBS/D	NULL	********	2.2	7.0	3.3	11	MG/L
10-Feb-2014	001	TKN (N-KJEL)	34.1	170	60.4	270	LBS/D	NULL	********	3.4	7.0	5.7	11	MG/L
10-Jan-2014	001	TKN (N-KJEL)	8.2	170	9.1	270	LBS/D	NULL	********	0.9	7.0	1.1	11	MG/L
10-Dec-2013	001	TKN (N-KJEL)	5.9	170	7.9	270	LBS/D	NULL	********	0.9	7.0	1.2	11	MG/L
10-Nov-2013	001	TKN (N-KJEL)	14.0	170	24.5	270	LBS/D	NULL	********	1.8	7.0	2.8	11	MG/L
10-Oct-2013	001	TKN (N-KJEL)	13.1	170	20.6	270	LBS/D	NULL	********	1.8	7.0	3.0	11	MG/L
10-Sep-2013	001	TKN (N-KJEL)	11.1	170	16.0	270	LBS/D	NULL	********	1.1	7.0	1.2	11	MG/L
10-Aug-2013	001	TKN (N-KJEL)	13.5	170	20.4	270	LBS/D	NULL	********	1.3	7.0	1.7	11	MG/L
10-Jul-2013	001	TKN (N-KJEL)	21.7	170	29.3	270	LBS/D	NULL	********	1.7	7.0	2.0	11	MG/L
10-Jun-2013	001	TKN (N-KJEL)	18.7	170	31.7	270	LBS/D	NULL	********	1.7	7.0	1.8	11	MG/L
10-May-2013	001	TKN (N-KJEL)	15.7	170	21.2	270	LBS/D	NULL	********	1.8	7.0	2.7	11	MG/L
10-Apr-2013	001	TKN (N-KJEL)	22.6	170	28.6	270	LBS/D	NULL	********	1.9	7.0	2.2	11	MG/L
10-Mar-2013	001	TKN (N-KJEL)	19.1	170	21.5	270	LBS/D	NULL	********	2.3	7.0	2.7	11	MG/L
10-Feb-2013	001	TKN (N-KJEL)	19.6	170	28.1	270	LBS/D	NULL	********	2.4	7.0	2.9	11	MG/L
10-Jan-2013	001	TKN (N-KJEL)	10.6	170	14.9	270	LBS/D	NULL	********	1.7	7.0	1.9	11	MG/L
10-Dec-2012	001	TKN (N-KJEL)	9.8	170	16.5	270	LBS/D	NULL	********	1.5	7.0	2.4	11	MG/L
10-Nov-2012	001	TKN (N-KJEL)	10.4	170	11.5	270	LBS/D	NULL	********	1.2	7.0	1.7	11	MG/L
10-Oct-2012	001	TKN (N-KJEL)	3.5	170	4.8	270	LBS/D	NULL	********	0.5	7.0	0.7	11	MG/L
10-Sep-2012	001	TKN (N-KJEL)	3.5	170	5.7	270	LBS/D	NULL	********	0.5	7.0	0.8	11	MG/L
10-Aug-2012	001	TKN (N-KJEL)	4.2	170	4.9	270	LBS/D	NULL	********	0.7	7.0	0.9	11	MG/L
10-Jul-2012	001	TKN (N-KJEL)	3.9	170	8.3	270	LBS/D	NULL	********	0.6	7.0	1.5	11	MG/L
10-Jun-2012	001	TKN (N-KJEL)	4.1	170	5.4	270	LBS/D	NULL	********	0.6	7.0	0.9	11	MG/L
10-May-2012	001	TKN (N-KJEL)	11.1	170	16.9	270	LBS/D	NULL	********	1.7	7.0	2.7	11	MG/L
10-Apr-2012	001	TKN (N-KJEL)	19.2	170	26.9	270	LBS/D	NULL	********	2.6	7.0	4.0	11	MG/L
10-Mar-2012	001	TKN (N-KJEL)	9.6	170	13.8	270	LBS/D	NULL	********	1.3	7.0	1.7	11	MG/L
10-Feb-2012	001	TKN (N-KJEL)	5.8	170	9.6	270	LBS/D	NULL	********	0.7	7.0	1.1	11	MG/L
10-Jan-2012	001	TKN (N-KJEL)	12.2	170	17.5	270	LBS/D	NULL	********	1.2	7.0	1.4	11	MG/L
10-Dec-2011	001	TKN (N-KJEL)	11.3	170	13.0	270	LBS/D	NULL	********	1.4	7.0	1.4	11	MG/L
10-Nov-2011	001	TKN (N-KJEL)	16.3	170	21.8	270	LBS/D	NULL	********	1.5	7.0	1.9	11	MG/L
10-Oct-2011	001	TKN (N-KJEL)	11.3	170	15.0	270	LBS/D	NULL	********	1.2	7.0	1.5	11	MG/L
10-Sep-2011	001	TKN (N-KJEL)	NULL	********	NULL	********	NULL	NULL	********	1.8	7.0	2.5	11.0	MG/L
10-Aug-2011	001	TKN (N-KJEL)	NULL	********	NULL	********	NULL	NULL	********	1.1	7.0	1.6	11.0	MG/L
10-Jul-2011	001	TKN (N-KJEL)	NULL	********	NULL	********	NULL	NULL	********	1.5	7.0	1.7	11.0	MG/L
10-Jun-2011	001	TKN (N-KJEL)	NULL	********	NULL	********	NULL	NULL	********	2.0	7.0	2.5	11.0	MG/L
10-May-2011	001	TKN (N-KJEL)	NULL	********	NULL	********	NULL	NULL	********	2.2	7.0	4.3	11.0	MG/L
10-Apr-2011	001	TKN (N-KJEL)	NULL	********	NULL	********	NULL	NULL	********	6.0	7.0	7.2	11.0	MG/L
10-Mar-2011	001	TKN (N-KJEL)	NULL	********	NULL	********	NULL	NULL	********	6.1	7.0	8.6	11.0	MG/L
10-Feb-2011	001	TKN (N-KJEL)	NULL	********	NULL	********	NULL	NULL	********	7.3	7.0	11.4	11.0	MG/L
10-Jan-2011	001	TKN (N-KJEL)	NULL	********	NULL	********	NULL	NULL	********	2.0	7.0	3.0	11.0	MG/L
10-Jan-2016	001	TSS	4.4	110	3.7	170	KG/D	NULL	********	1.1	10	1.2	15	MG/L
10-Dec-2015	001	TSS	4.2	110	5.4	170	KG/D	NULL	********	1.3	10	1.8	15	MG/L
10-Nov-2015	001	TSS	1.1	110	2.7	170	KG/D	NULL	********	0.3	10	0.9	15	MG/L
10-Oct-2015	001	TSS	2.2	110	2.3	170	KG/D	NULL	********	0.8	10	0.9	15	MG/L
10-Sep-2015	001	TSS	2.1	110	2.9	170	KG/D	NULL	********	0.8	10	1.1	15	MG/L
10-Aug-2015	001	TSS	4.6	110	8.0	170	KG/D	NULL	********	1.3	10	2.3	15	MG/L
10-Jul-2015	001	TSS	4.6	110	7.0	170	KG/D	NULL	********	1.3	10	1.9	15	MG/L
10-Jun-2015	001	TSS	5.7	110	7.5	170	KG/D	NULL	********	1.6	10	1.9	15	MG/L
10-May-2015	001	TSS	7.9	110	13.4	170	KG/D	NULL	********	1.7	10	2.1	15	MG/L
10-Apr-2015	001	TSS	7.8	110	11.3	170	KG/D	NULL	********	1.9	10	2.8	15	MG/L
10-Mar-2015	001	TSS	5.4	110	6.6	170	KG/D	NULL	********	1.8	10	2.4	15	MG/L
10-Feb-2015	001	TSS	4.7	110	6.3	170	KG/D	NULL	********	1.6	10	2.2	15	MG/L
10-Jan-2015	001	TSS	4.5	110	5.5	170	KG/D	NULL	********	1.4	10	1.6	15	MG/L
10-Dec-2014	001	TSS	5.1	110	8.8	170	KG/D	NULL	********	1.8	10	2.6	15	MG/L
10-Nov-2014	001	TSS	4.5	110	5.8	170	KG/D	NULL	********	1.5	10	1.6	15	MG/L
10-Oct-2014	001	TSS	4.8	110	6.3	170	KG/D	NULL	********	2.2	10	2.6	15	MG/L
10-Sep-2014	001	TSS	3.3	110	4.9	170	KG/D	NULL	********	1.2	10	1.5	15	MG/L
10-Aug-2014	001	TSS	6.4	110	8.8	170	KG/D	NULL	********	2.1	10	2.9	15	MG/L
10-Jul-2014	001	TSS	5.6	110	7.2	170	KG/D	NULL	********	1.4	10	2.0	15	MG/L
10-Jun-2014	001	TSS	8.8	110	9.7	170	KG/D	NULL	********	1.3	10	2.0	15	MG/L
10-May-2014	001	TSS	10.1	110	16.0	170	KG/D	NULL	********	1.8	10	2.6	15	MG/L
10-Apr-2014	001	TSS	6.0	110	8.4	170	KG/D	NULL	********	1.2	10	1.7	15	MG/L
10-Mar-2014	001	TSS	8.0	110	13.6	170	KG/D	NULL	********	1.4	10	2.4	15	MG/L
10-Feb-2014	001	TSS	3.3	110	4.5	170	KG/D	NULL	********	0.7	10	1.0	15	MG/L
10-Jan-2014	001	TSS	2.1	110	2.1	170	KG/D	NULL	********	0.4	10	0.5	15	MG/L
10-Dec-2013	001	TSS	1.3	110	1.3	170	KG/D	NULL	********	0.4	10	0.5	15	MG/L
10-Nov-2013	001	TSS	2.4	110	4.7	170	KG/D	NULL	********	0.7	10	1.3	15	MG/L
10-Oct-2013	001	TSS	1.0	110	1.6	170	KG/D	NULL	********	0.3	10	0.5	15	MG/L
10-Sep-2013	001	TSS	2.1	110	3.5	170	KG/D	NULL	********	0.5	10	1.0	15	MG/L
10-Aug-2013	001	TSS	3.2	110	2.7	170	KG/D	NULL	********	0.6	10	0.5	15	MG/L
10-Jul-2013	001	TSS	12.4	110	17.3	170	KG/D	NULL	********	2.1	10	2.3	15	MG/L
10-Jun-2013	001	TSS	6.4	110	9.9	170	KG/D	NULL	********	1.4	10	2.2	15	MG/L
10-May-2013	001	TSS	5.2	110	7.3	170	KG/D	NULL	********	1.3	10	1.7	15	MG/L
10-Apr-2013	001	TSS	6.7	110	7.9	170	KG/D	NULL	********	1.3	10	1.7	15	MG/L
10-Mar-2013	001	TSS	5.6	110	6.2	170	KG/D	NULL	********	1.5	10	2.0	15	MG/L

10-Feb-2013	001	TSS	6.5	110	10.6	170	KG/D	NULL	********	1.8	10	2.4	15	MG/L
10-Jan-2013	001	TSS	7.1	110	8.2	170	KG/D	NULL	********	2.5	10	2.9	15	MG/L
10-Dec-2012	001	TSS	4.2	110	5.7	170	KG/D	NULL	********	1.5	10	2.2	15	MG/L
10-Nov-2012	001	TSS	3.8	110	4.8	170	KG/D	NULL	********	1.1	10	1.6	15	MG/L
10-Oct-2012	001	TSS	3.1	110	4.4	170	KG/D	NULL	********	1.0	10	1.6	15	MG/L
10-Sep-2012	001	TSS	3.8	110	4.5	170	KG/D	NULL	********	1.1	10	1.5	15	MG/L
10-Aug-2012	001	TSS	1.8	110	3.3	170	KG/D	NULL	********	0.7	10	1.1	15	MG/L
10-Jul-2012	001	TSS	1.7	110	2.3	170	KG/D	NULL	********	0.6	10	0.8	15	MG/L
10-Jun-2012	001	TSS	2.5	110	3.0	170	KG/D	NULL	********	0.9	10	1.0	15	MG/L
10-May-2012	001	TSS	6.5	110	7.9	170	KG/D	NULL	********	2.2	10	3.0	15	MG/L
10-Apr-2012	001	TSS	6.6	110	7.5	170	KG/D	NULL	********	1.9	10	2.4	15	MG/L
10-Mar-2012	001	TSS	6.2	110	6.6	170	KG/D	NULL	********	1.9	10	2.0	15	MG/L
10-Feb-2012	001	TSS	6.9	110	10.3	170	KG/D	NULL	********	2.0	10	2.5	15	MG/L
10-Jan-2012	001	TSS	5.5	110	9.9	170	KG/D	NULL	********	1.1	10	1.3	15	MG/L
10-Dec-2011	001	TSS	4.2	110	5.1	170	KG/D	NULL	********	1.1	10	1.1	15	MG/L
10-Nov-2011	001	TSS	7.0	110	15.5	170	KG/D	NULL	********	1.1	10	1.9	15	MG/L
10-Oct-2011	001	TSS	4.9	110	6.7	170	MGD	NULL	********	0.9	10	1.4	15	MG/L
10-Sep-2011	001	TSS	2.1	114	5.2	170	KG/D	NULL	********	0.7	10	1.8	15	MG/L
10-Aug-2011	001	TSS	1.9	114	4.4	170	KG/D	NULL	********	0.6	10	1.2	15	MG/L
10-Jul-2011	001	TSS	3.0	114	5.0	170	KG/D	NULL	********	1.2	10	1.8	15	MG/L
10-Jun-2011	001	TSS	7.7	114	14.7	170	KG/D	NULL	********	2.1	10	2.8	15	MG/L
10-May-2011	001	TSS	6.8	114	8.5	170	KG/D	NULL	********	2.1	10	2.8	15	MG/L
10-Apr-2011	001	TSS	18.0	114	37.9	170	KG/D	NULL	********	4.4	10	5.4	15	MG/L
10-Mar-2011	001	TSS	14.0	114	12.7	170	KG/D	NULL	********	5.9	10	5.9	15	MG/L
10-Feb-2011	001	TSS	12.9	114	5.2	170	KG/D	NULL	********	4.2	10	3.0	15	MG/L
10-Jan-2011	001	TSS, MAY-DEC	NR	85.0	NR	128.0	KG/D	NULL	********	1.3	30.0	1.8	45.0	MG/L
10-Jan-2016	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.53	NL	TU-C
10-Jan-2015	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.00	NL	TU-C
10-Oct-2013	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Jul-2013	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Apr-2013	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.00	NL	TU-C
10-Jan-2013	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.00	NL	TU-C
10-Oct-2012	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.00	NL	TU-C
10-Jul-2012	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Apr-2012	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Jan-2012	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Aug-2011	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Feb-2011	001	TUc - CHRONIC 3-BROOD STATRE CERIODAPHNIA DUBIA	NULL	********	NULL	********	NULL	NULL	********	NULL	********	NR	NL	TU-C
10-Jan-2016	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.00	NL	TU-C
10-Jan-2015	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Oct-2013	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Jul-2013	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Apr-2013	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.00	NL	TU-C
10-Jan-2013	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.00	NL	TU-C
10-Oct-2012	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.00	NL	TU-C

10-Jul-2012	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Apr-2012	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Jan-2012	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Aug-2011	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	1.0	NL	TU-C
10-Feb-2011	001	TUc - CHRONIC 7-DAY STATRE PIMEPHALES PROMELAS	NULL	********	NULL	********	NULL	NULL	********	NULL	********	NR	NL	TU-C
10-Jan-2016	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	39	87	54	87	UG/L
10-Oct-2015	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	70	NL	70	NL	UG/L
10-Jul-2015	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	59	NL	59	NL	UG/L
10-Apr-2015	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	72	NL	72	NL	UG/L
10-Jan-2015	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	67	NL	67	NL	UG/L
10-Oct-2014	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	70	NL	70	NL	UG/L
10-Jul-2014	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	57.5	NL	65	NL	UG/L
10-Apr-2014	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	51	NL	51	NL	UG/L
10-Jan-2014	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	87.5	NL	123	NL	UG/L
10-Oct-2013	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	49	NL	76	NL	UG/L
10-Jul-2013	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	57.5	NL	64	NL	UG/L
10-Apr-2013	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	59.2	NL	94	NL	UG/L
10-Jan-2013	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	77	NL	77	NL	UG/L
10-Oct-2012	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	61	NL	61	NL	UG/L
10-Jul-2012	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	36	NL	36	NL	UG/L
10-Apr-2012	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	67	NL	90	NL	UG/L
10-Jan-2012	001	ZINC, TOTAL RECOVERABLE	NULL	********	NULL	********	NULL	NULL	********	43	NL	49	NL	UG/L

Attachment 13 – Mixing Analysis for High and Low Flows

Mixing Zone Predictions for Town of Orange WWTP

high flow

Effluent Flow = 3.0 MGD
Stream 7Q10 = 25.12 MGD
Stream 30Q10 = 35.71 MGD
Stream 1Q10 = 19.86 MGD
Stream slope = 0.001 ft/ft
Stream width = 80 ft
Bottom scale = 4
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 1.3516 ft
Length = 3653.98 ft
Velocity = .4025 ft/sec
Residence Time = .1051 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 1.6423 ft
Length = 3091.54 ft
Velocity = .4561 ft/sec
Residence Time = .0785 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 1.1921 ft
Length = 4066.96 ft
Velocity = .3711 ft/sec
Residence Time = 3.0446 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 32.84% of the 1Q10 is used.

Mixing Zone Predictions for Town of Orange WWTP

low flow

Effluent Flow = 3.0 MGD
Stream 7Q10 = 2.68 MGD
Stream 30Q10 = 6.65 MGD
Stream 1Q10 = 1.49 MGD
Stream slope = 0.001 ft/ft
Stream width = 80 ft
Bottom scale = 4
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .5136 ft
Length = 8295.78 ft
Velocity = .214 ft/sec
Residence Time = .4487 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .7072 ft
Length = 6334.13 ft
Velocity = .264 ft/sec
Residence Time = .2777 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .4457 ft
Length = 9346.13 ft
Velocity = .1949 ft/sec
Residence Time = 13.3183 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 7.51% of the 1Q10 is used.

Attachment 14 – Dissolved Oxygen Model

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to RAPIDAN RIVER.

File Information

File Name:	C:\Users\caitlin.shipman@deq.virginia.gov\Documents\Facilties\VA0021:
Date Modified:	February 23, 2016

Water Quality Standards Information

Stream Name:	RAPIDAN RIVER
River Basin:	Rappahannock River Basin
Section:	04
Class:	III - Nontidal Waters (Coastal and Piedmont)
Special Standards:	None

Background Flow Information

Gauge Used:	01665500
Gauge Drainage Area:	114 Sq.Mi.
Gauge 7Q10 Flow:	2.585 MGD
Headwater Drainage Area:	233 Sq.Mi.
Headwater 7Q10 Flow:	2.684 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges:	-2.6 MGD
Incremental Flow in Segments:	2.267544E-02 MGD/Sq.Mi.

Background Water Quality

Background Temperature:	24.6 Degrees C
Background cBOD5:	2 mg/l
Background TKN:	0 mg/l
Background D.O.:	7.463439 mg/l

Model Segmentation

Number of Segments:	1
Model Start Elevation:	331 ft above MSL
Model End Elevation:	315 ft above MSL

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to RAPIDAN RIVER.

File Information

File Name:	C:\Users\caitlin.shipman@deq.virginia.gov\Desktop\DO Model - Tier 1.m
Date Modified:	May 18, 2016

Water Quality Standards Information

Stream Name:	RAPIDAN RIVER
River Basin:	Rappahannock River Basin
Section:	04
Class:	III - Nontidal Waters (Coastal and Piedmont)
Special Standards:	None

Background Flow Information

Gauge Used:	01665500
Gauge Drainage Area:	114 Sq.Mi.
Gauge 7Q10 Flow:	2.585 MGD
Headwater Drainage Area:	233 Sq.Mi.
Headwater 7Q10 Flow:	2.684 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges:	-2.6 MGD
Incremental Flow in Segments:	2.267544E-02 MGD/Sq.Mi.

Background Water Quality

Background Temperature:	24.6 Degrees C
Background cBOD5:	2 mg/l
Background TKN:	0 mg/l
Background D.O.:	7.463439 mg/l

Model Segmentation

Number of Segments:	1
Model Start Elevation:	331 ft above MSL
Model End Elevation:	315 ft above MSL

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge to RAPIDAN RIVER.

Segment Information for Segment 1

Definition Information

Segment Definition:	A discharge enters.
Discharge Name:	TOWN OR ORANGE
VPDES Permit No.:	0021385

Discharger Flow Information

Flow:	3 MGD
cBOD5:	10 mg/l
TKN:	7 mg/l
D.O.:	6 mg/l
Temperature:	25 Degrees C

Geographic Information

Segment Length:	1 miles
Upstream Drainage Area:	233 Sq.Mi.
Downstream Drainage Area:	0 Sq.Mi.
Upstream Elevation:	331 Ft.
Downstream Elevation:	315 Ft.

Hydraulic Information

Segment Width:	75 Ft.
Segment Depth:	0.44 Ft.
Segment Velocity:	0.26 Ft./Sec.
Segment Flow:	5.684 MGD
Incremental Flow:	-5.283 MGD (Applied at end of segment.)

Channel Information

Cross Section:	Rectangular
Character:	Moderately Meandering
Pool and Riffle:	Yes
Percent Pools:	60
Percent Riffles:	40
Pool Depth:	0.66 Ft.
Riffle Depth:	0.22 Ft.
Bottom Type:	Large Rock
Sludge:	None
Plants:	Few
Algae:	None

"Model Run For U:\Water Quality\Permits\VPDES Program\Facility Archive\Orange Town STP (VA0021385)\2016 Reissuance\DO Model\DO Model - Tier 1.mod On 2/23/2016 9:01:55 AM"

"Model is for RAPIDAN RIVER."
"Model starts at the TOWN OR ORANGE discharge."

"Background Data"

"7Q10"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
2.684,	2,	0,	7.463,	24.6

"Discharge/Tributary Input Data for Segment 1"

"Flow"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
3,	10,	5,	,6,	25

"Hydraulic Information for Segment 1"

"Length"	"Width"	"Depth"	"Velocity"
"(mi)"	"(ft)"	"(ft)"	"(ft/sec)"
1,	75,	.44,	.26

"Initial Mix Values for Segment 1"

"Flow"	"DO"	"cBOD"	"nBOD"	"DOSat"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
5.684,	6.691,	15.556,	4.571,	8.266,	24.81112

"Rate Constants for Segment 1. - (All units Per Day)"

"k1"	"k1@T"	"k2"	"k2@T"	"kn"	"kn@T"	"BD"	"BD@T"
1,	1.247,	9.6,	10.76,	.35,	.507,	0,	0

"Output for Segment 1"
"Segment starts at TOWN OR ORANGE"

"Total"	"Segm."			
"Dist."	"Dist."	"DO"	"cBOD"	"nBOD"
"(mi)"	"(mi)"	"(mg/l)"	"(mg/l)"	"(mg/l)"
0,	0,	6.691,	15.556,	4.571
.1,	.1,	6.598,	15.107,	4.517
.2,	.2,	6.538,	14.671,	4.464
.3,	.3,	6.503,	14.247,	4.411
.4,	.4,	6.487,	13.835,	4.359
.5,	.5,	6.486,	13.435,	4.307
.6,	.6,	6.496,	13.047,	4.256
.7,	.7,	6.514,	12.67,	4.206
.8,	.8,	6.538,	12.304,	4.156
.9,	.9,	6.567,	11.949,	4.107
1,	1,	6.599,	11.604,	4.058

"END OF FILE"

Attachment 15 – Summary of Influent, Effluent, and Digester Decant Metals Testing

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757 460.4205 • Fax: 757 460.6586 • www.hrsd.com

03/22/16 - Town of Orange - FNE, INF, DD

This analytical report contains 6 pages and Field Records.

Michelle Steinberger ams@townoforangeva.org
Chief Operator
Town of Orange WWTP
13222 Spicers Mill Road
Orange, VA 22960

cc: Danny Barker dbarker@hrsd.com

Date Sent: 04/06/16

HRSD CEL, Central Environmental Laboratory is VELAP/NELAC accredited by DCLS, the Division of Consolidated Laboratory Services.

VA Laboratory ID#: 460011

Analytical test results meet all requirements of VELAP/NELAC unless otherwise noted under the analysis.

Test results relate only to the sample tested. Clients should be aware that a critical step in chemical or microbiological analysis is the collection of the sample.

If you have any questions concerning this report, please do not hesitate to contact
Danny Barker, TSD Environmental Scientist at (757) 460-4247
dbarker@hrsd.com
Robin Parnell, CEL Laboratory Manager at (757) 460-4203
rparnell@hrsd.com
Kim Fordyce, CEL/MAP Coordinator at (757) 460-4205
kfordyce@hrsd.com

CENTRAL ENVIRONMENTAL
LABORATORY
ANALYTICAL REPORT
VA Laboratory ID 460011

HRSD

Job ID: OR-22-MAR-16-271

Report Serial No.: 2016-808

Sample ID: OR_DD-G-032216-1
Sample Date: 3/22/2016
Customer Sample ID: Town of Orange WWTP - Digester Decant
Sample ID: 530529
Sample Sub-Type: SAMP

Analyte	Method	CAS#	Unit	Result	Flag	LOQ	Analyst	Analysis Date	Analysis Time
Mercury, Total	EPA 245.1	92786-62-4	ug/l	<0.10		0.10	ESTRANGE	04/01/16	10:38
Antimony, Total	EPA 200.8, Rev. 5.4	7440-36-0	ug/l	<20.0		20.0	KWILLIAMS	04/05/16	14:32
Arsenic, Total	EPA 200.8, Rev. 5.4	7440-38-2	ug/l	<20.0		20.0	KWILLIAMS	04/05/16	14:32
Beryllium, Total	EPA 200.8, Rev. 5.4	7440-41-7	ug/l	<1.0		1.0	KWILLIAMS	04/05/16	14:32
Cadmium, Total	EPA 200.8, Rev. 5.4	7440-43-9	ug/l	<0.10		0.10	KWILLIAMS	04/05/16	14:32
Chromium, Total	EPA 200.8, Rev. 5.4	7440-47-3	ug/l	<5.0		5.0	KWILLIAMS	04/05/16	14:32
Copper, Total	EPA 200.8, Rev. 5.4	7440-50-8	ug/l	5.1		1.0	KWILLIAMS	04/05/16	14:32
Lead, Total	EPA 200.8, Rev. 5.4	7439-92-1	ug/l	<1.0		1.0	KWILLIAMS	04/05/16	14:32
Nickel, Total	EPA 200.8, Rev. 5.4	7440-02-0	ug/l	2.7		2.0	KWILLIAMS	04/05/16	14:32
Selenium, Total	EPA 200.8, Rev. 5.4	7782-49-2	ug/l	<2.0		2.0	KWILLIAMS	04/05/16	14:32
Silver, Total	EPA 200.8, Rev. 5.4	7440-22-4	ug/l	<0.2		0.2	KWILLIAMS	04/05/16	14:32
Thallium, Total	EPA 200.8, Rev. 5.4	7440-28-0	ug/l	<0.5		0.5	KWILLIAMS	04/05/16	14:32
Zinc, Total	EPA 200.8, Rev. 5.4	7440-66-6	ug/l	12.8		10.0	KWILLIAMS	04/05/16	14:32

Notes

LOQ is lowest concentration at which quantitation is demonstrated.
*Analyte is not included in the HRSD CEL VELAP scope of accreditation

Print Date: 4/6/2016

CENTRAL ENVIRONMENTAL
LABORATORY
ANALYTICAL REPORT
VA Laboratory ID 460011

HRSD

Job ID: OR-22-MAR-16-271

Report Serial No.: 2016-808

Sample ID: OR_FNE-C-032216-1
Sample Date: 3/22/2016
Customer Sample ID: Town of Orange WWTP - Final Effluent
Sample ID: 530530
Sample Sub-Type: SAMP

Analyte	Method	CAS#	Unit	Result	Flag	LOQ	Analyst	Analysis Date	Analysis Time
Mercury, Total	EPA 245.1	92786-62-4	ug/l	<0.10		0.10	ESTRANGE	04/01/16	10:25
Antimony, Total	EPA 200.8, Rev. 5.4	7440-36-0	ug/l	<20.0		20.0	KWILLIAMS	04/05/16	14:06
Arsenic, Total	EPA 200.8, Rev. 5.4	7440-38-2	ug/l	<20.0		20.0	KWILLIAMS	04/05/16	14:06
Beryllium, Total	EPA 200.8, Rev. 5.4	7440-41-7	ug/l	<1.0		1.0	KWILLIAMS	04/05/16	14:06
Cadmium, Total	EPA 200.8, Rev. 5.4	7440-43-9	ug/l	<0.10		0.10	KWILLIAMS	04/05/16	14:06
Chromium, Total	EPA 200.8, Rev. 5.4	7440-47-3	ug/l	<5.0		5.0	KWILLIAMS	04/05/16	14:06
Copper, Total	EPA 200.8, Rev. 5.4	7440-50-8	ug/l	1.5		1.0	KWILLIAMS	04/05/16	14:06
Lead, Total	EPA 200.8, Rev. 5.4	7439-92-1	ug/l	<1.0		1.0	KWILLIAMS	04/05/16	14:06
Nickel, Total	EPA 200.8, Rev. 5.4	7440-02-0	ug/l	<2.0		2.0	KWILLIAMS	04/05/16	14:06
Selenium, Total	EPA 200.8, Rev. 5.4	7782-49-2	ug/l	<2.0		2.0	KWILLIAMS	04/05/16	14:06
Silver, Total	EPA 200.8, Rev. 5.4	7440-22-4	ug/l	<0.2		0.2	KWILLIAMS	04/05/16	14:06
Thallium, Total	EPA 200.8, Rev. 5.4	7440-28-0	ug/l	<0.5		0.5	KWILLIAMS	04/05/16	14:06
Zinc, Total	EPA 200.8, Rev. 5.4	7440-66-6	ug/l	32.7		10.0	KWILLIAMS	04/05/16	14:06
Antimony, Dissolved	EPA 200.8, Rev. 5.4	7440-36-0	ug/l	<20.0		20.0	KWILLIAMS	04/05/16	14:22
Arsenic, Dissolved	EPA 200.8, Rev. 5.4	7440-38-2	ug/l	<20.0		20.0	KWILLIAMS	04/05/16	14:22
Beryllium, Dissolved	EPA 200.8, Rev. 5.4	7440-41-7	ug/l	<1.0		1.0	KWILLIAMS	04/05/16	14:22
Cadmium, Dissolved	EPA 200.8, Rev. 5.4	7440-43-9	ug/l	<0.10		0.10	KWILLIAMS	04/05/16	14:22
Chromium, Dissolved	EPA 200.8, Rev. 5.4	7440-47-3	ug/l	<5.0		5.0	KWILLIAMS	04/05/16	14:22
Copper, Dissolved	EPA 200.8, Rev. 5.4	7440-50-8	ug/l	<1.0		1.0	KWILLIAMS	04/05/16	14:22

Notes

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CENTRAL ENVIRONMENTAL
LABORATORY
ANALYTICAL REPORT
VA Laboratory ID 460011

HRSD

Job ID: OR-22-MAR-16-271

Report Serial No.: 2016-808

Sample ID: OR_FNE-C-032216-1
Sample Date: 3/22/2016
Customer Sample ID: Town of Orange WWTP - Final Effluent
Sample ID: 530530
Sample Sub-Type: SAMP

Analyte	Method	CAS#	Unit	Result	Flag	LOQ	Analyst	Analysis Date	Analysis Time
Lead, Dissolved	EPA 200.8, Rev. 5.4	7439-92-1	ug/l	<1.0		1.0	KWILLIAMS	04/05/16	14:22
Nickel, Dissolved	EPA 200.8, Rev. 5.4	7440-02-0	ug/l	<2.0		2.0	KWILLIAMS	04/05/16	14:22
Selenium, Dissolved	EPA 200.8, Rev. 5.4	7782-49-2	ug/l	<2.0		2.0	KWILLIAMS	04/05/16	14:22
Silver, Dissolved	EPA 200.8, Rev. 5.4	7440-22-4	ug/l	<0.2		0.2	KWILLIAMS	04/05/16	14:22
Thallium, Dissolved	EPA 200.8, Rev. 5.4	7440-28-0	ug/l	<0.5		0.5	KWILLIAMS	04/05/16	14:22
Zinc, Dissolved	EPA 200.8, Rev. 5.4	7440-66-6	ug/l	31.6		10.0	KWILLIAMS	04/05/16	14:22
Mercury, Dissolved	EPA 245.1	92786-62-4	ug/l	<0.10		0.10	ESTRANGE	04/01/16	10:35

Notes

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CENTRAL ENVIRONMENTAL
LABORATORY
ANALYTICAL REPORT
VA Laboratory ID 460011

HRSD

Job ID: OR-22-MAR-16-271

Report Serial No.: 2016-808

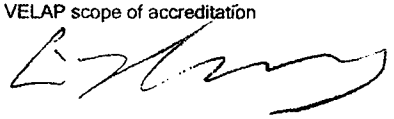
Sample ID: OR_INF-C-032216-1
Sample Date: 3/22/2016
Customer Sample ID: Town of Orange WWTP - Raw Influent
Sample ID: 530528
Sample Sub-Type: SAMP

Analyte	Method	CAS#	Unit	Result	Flag	LOQ	Analyst	Analysis Date	Analysis Time
Mercury, Total	EPA 245.1	92786-62-4	ug/l	<0.10		0.10	ESTRANGE	04/01/16	10:41
Antimony, Total	EPA 200.8, Rev. 5.4	7440-36-0	ug/l	<40.0		40.0	KWILLIAMS	04/05/16	14:27
Arsenic, Total	EPA 200.8, Rev. 5.4	7440-38-2	ug/l	<40.0		40.0	KWILLIAMS	04/05/16	14:27
Beryllium, Total	EPA 200.8, Rev. 5.4	7440-41-7	ug/l	<2.0		2.0	KWILLIAMS	04/05/16	14:27
Cadmium, Total	EPA 200.8, Rev. 5.4	7440-43-9	ug/l	<0.20		0.20	KWILLIAMS	04/05/16	14:27
Chromium, Total	EPA 200.8, Rev. 5.4	7440-47-3	ug/l	<10.0		10.0	KWILLIAMS	04/05/16	14:27
Copper, Total	EPA 200.8, Rev. 5.4	7440-50-8	ug/l	75.1		2.0	KWILLIAMS	04/05/16	14:27
Lead, Total	EPA 200.8, Rev. 5.4	7439-92-1	ug/l	3.6		2.0	KWILLIAMS	04/05/16	14:27
Nickel, Total	EPA 200.8, Rev. 5.4	7440-02-0	ug/l	<4.0		4.0	KWILLIAMS	04/05/16	14:27
Selenium, Total	EPA 200.8, Rev. 5.4	7782-49-2	ug/l	<4.0		4.0	KWILLIAMS	04/05/16	14:27
Silver, Total	EPA 200.8, Rev. 5.4	7440-22-4	ug/l	<0.4		0.4	KWILLIAMS	04/05/16	14:27
Thallium, Total	EPA 200.8, Rev. 5.4	7440-28-0	ug/l	<1.0		1.0	KWILLIAMS	04/05/16	14:27
Zinc, Total	EPA 200.8, Rev. 5.4	7440-66-6	ug/l	138		20.0	KWILLIAMS	04/05/16	14:27

Notes

LOQ is lowest concentration at which quantitation is demonstrated.
*Analyte is not included in the HRSD CEL VELAP scope of accreditation

Authorized By: Li Zhang - Lab Manager



Date Authorized: 4/6/2016

CENTRAL ENVIRONMENT LABORATORY
1432 AIR RAIL AVENUE
VIRGINIA BEACH, VA 23455
TEL: 757-460-4214
FAX: 757-460-6586

CHAIN OF CUSTODY

COC ID: 24861 COC NAME: OR_03/23/16 06:47

Sample ID	Container No	Job Name	Date	Time	Sampler Id	Matrix	Type	Samp Temp oC	Preservation	Status	HG_CVAF	PMS_200
OR_DD-G-032216-1	C309975	OR-22-MAR-16-271	03/22/2016	1120	BWECKWORTH	L	G	.	.	R	X	X
OR_FNE-C-032216-1	C309977	OR-22-MAR-16-271	03/22/2016	1200	BWECKWORTH	L	C	.	.	R	X	X
	C309976	OR-22-MAR-16-271	03/22/2016	1200	BWECKWORTH	L	C	.	.	R	X	X
OR_INF-C-032216-1	C309974	OR-22-MAR-16-271	03/22/2016	1220	BWECKWORTH	L	C	.	.	R	X	X

Comments:

Sample ID	Container No	Comment

ACTION	BY	DATE/TIME
INITIATED:	Bruce Weckworth - TSD	3/23/2016 6:46:10 AM
CUSTODY:		
RECEIVED:	Ashley Roberts - Specialist	3/23/2016 6:51:06 AM

FIELD

RECORD (S)

Orange Clean Metals Field Sheet

Information To Be Checked Before The Start of Each Sampling Event

1. Does the Final Effluent have any abnormal characteristics (odor, color)? Y (N)

If the answer to the above questions is NO proceed to the next section. Please contact a supervisor if the answer is YES.

2. A. Average Plant flow for the last five days: —
   B. Expected Plant flow for the next 24 hours: 0.820 mgd
3. List the last three days of Final ~~Effluent~~ Influent TSS with the most recent last: 100, 230, 200 mg/L
4. Contact Closure: (Expected Flow / 10000 / —) N/A Pulses per sample.
5. Samplers calibrated at 200 ml per sample. (Desired volume/~~10000~~ 15000/ 48)
   Final Effluent Start Time / Date: 3/21/16 @ 1200
   RWI Start Time / Date: 3/21/16 @ 1220

The above information has been completed prior to the beginning of the sampling event. Int. BC

Sampling personnel: B. Weckwerth, R. Langley, _____

Information Check At The End Of The Sampling Event

1. Are all lids, compression assemblies and caps secure? Y / N
2. Final Effluent TSS for the sampling period: 200
3. Plant flow for the sampling period 0.8226, 0.8189 mgd
4. Number of samples collected in each composite container:
   Final Effluent: 48
   RWI: 48
5. Final Effluent & FB composite end time and date:
   Final Effluent End Time / Date: 3/22/16 @ 1200
   RWI End Time / Date: 3/22/16 @ 1220
6. Is Temperature in collection container at the end of sampling <6° C? (Y) N
7. Are sample volumes equal in all composite containers? (Y) N
8. Grab times and dates:
   Digester Metals: 3/22/16 @ 1120

Sampling personnel: B. Weckwerth, R. Langley, _____

Please contact project lead with any problems incurred during the sampling event.

Record any other information that could affect sample results:

Attachment 16 – Limit Derivations for Metals (STATS)

2/3/2016 12:05:02 PM

Facility = Town of Orange WWTP
Chemical = Lead
Chronic averaging period = 4
WLAa = 150
WLAc = 19
Q.L. = 0.050
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 3
Expected Value = .219333
Variance = .017318
C.V. = 0.6
97th percentile daily values = .533729
97th percentile 4 day average = .364924
97th percentile 30 day average= .264527
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

0.171
0.19
0.297

2/4/2016 9:08:38 AM

Facility = Town of Orange WWTP
Chemical = Nickel
Chronic averaging period = 4
WLAa = 220
WLAc = 31
Q.L. = 1
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 3
Expected Value = 2.2
Variance = 1.7424
C.V. = 0.6
97th percentile daily values = 5.35351
97th percentile 4 day average = 3.66033
97th percentile 30 day average= 2.65331
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

2.11
1.88
2.61

2/3/2016 12:06:50 PM

Facility = Town of Orange WWTP
Chemical = Mercury
Chronic averaging period = 4
WLAa = 1.5
WLAc = 1.5
Q.L. = 0.00020
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 3
Expected Value = .002788
Variance = .000002
C.V. = 0.6
97th percentile daily values = .006785
97th percentile 4 day average = .004639
97th percentile 30 day average= .003362
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

0.000935
0.00153
0.0059

2/3/2016 4:04:03 PM

Facility = Town of Orange WWTP
Chemical = Copper
Chronic averaging period = 4
WLAa = 16
WLAc = 14
Q.L. = 0.3
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 37
Expected Value = 4.63185
Variance = 3.76257
C.V. = 0.418781
97th percentile daily values = 9.10014
97th percentile 4 day average = 6.69357
97th percentile 30 day average= 5.29799
< Q.L. = 0
Model used = lognormal

No Limit is required for this material

The data are:

5
5
3
3
4
2
2
8
2
2
4
2
9
7
4
3
3.5
3.5
3.1
5
4.88
4.24
4.99
5

5
5
5
5
5
6
5
9
5
5
5

2/3/2016 4:06:34 PM

Facility = Town of Orange WWTP
Chemical = Zinc
Chronic averaging period = 4
WLAa = 140
WLAc = 180
Q.L. = 0.5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 17
Expected Value = 69.4437
Variance = 391.077
C.V. = 0.284772
97th percentile daily values = 112.931
97th percentile 4 day average = 89.7445
97th percentile 30 day average= 76.2351
< Q.L. = 0
Model used = lognormal

No Limit is required for this material

The data are:

54
70
59
72
67
70
65
51
123
76
64
94
77
61
36
90
49

Attachment 17 – Compliance History Analysis for $cBOD_5$ Limit

Due	Outfall	Parameter Description	CONC AVG	Lim Avg	CONC MAX	Lim Max	Concentration Unit Lim
10-Jan-2016	001	CBOD5	0	10	0	15	MG/L
10-Dec-2015	001	CBOD5	0.2	10	1	15	MG/L
10-Nov-2015	001	CBOD5	0	10	0	15	MG/L
10-Oct-2015	001	CBOD5	0.5	10	0	15	MG/L
10-Sep-2015	001	CBOD5	0	10	0	15	MG/L
10-Aug-2015	001	CBOD5	0	10	0	15	MG/L
10-Jul-2015	001	CBOD5	5.6	10	7.1	15	MG/L
10-Jun-2015	001	CBOD5	2.5	10	7.5	15	MG/L
10-May-2015	001	CBOD5	0.4	10	0	15	MG/L
10-Apr-2015	001	CBOD5	0	10	0	15	MG/L
10-Mar-2015	001	CBOD5	0	10	0	15	MG/L
10-Feb-2015	001	CBOD5	0	10	0	15	MG/L
10-Jan-2015	001	CBOD5	0	10	0	15	MG/L
10-Dec-2014	001	CBOD5	0	10	0	15	MG/L
10-Nov-2014	001	CBOD5	0	10	0	15	MG/L
10-Oct-2014	001	CBOD5	0	10	0	15	MG/L
10-Sep-2014	001	CBOD5	0	10	0	15	MG/L
10-Aug-2014	001	CBOD5	0	10	0	15	MG/L
10-Jul-2014	001	CBOD5	0	10	0	15	MG/L
10-Jun-2014	001	CBOD5	0	10	0	15	MG/L
10-May-2014	001	CBOD5	0	10	0	15	MG/L
10-Apr-2014	001	CBOD5	0	10	0	15	MG/L
10-Mar-2014	001	CBOD5	0	10	0	15	MG/L
10-Feb-2014	001	CBOD5	0	10	0	15	MG/L
10-Jan-2014	001	CBOD5	0	10	0	15	MG/L
10-Dec-2013	001	CBOD5	0	10	0	15	MG/L
10-Nov-2013	001	CBOD5	0	10	0	15	MG/L
10-Oct-2013	001	CBOD5	0	10	0	15	MG/L
10-Sep-2013	001	CBOD5	0	10	0	15	MG/L
10-Aug-2013	001	CBOD5	0	10	0	15	MG/L
10-Jul-2013	001	CBOD5	0	10	0	15	MG/L
10-Jun-2013	001	CBOD5	0.3	10	0	15	MG/L
10-May-2013	001	CBOD5	0	10	0	15	MG/L
10-Apr-2013	001	CBOD5	0	10	0	15	MG/L
10-Mar-2013	001	CBOD5	0	10	0	15	MG/L
10-Feb-2013	001	CBOD5	0	10	0	15	MG/L
10-Jan-2013	001	CBOD5	0	10	0	15	MG/L
10-Dec-2012	001	CBOD5	0	10	0	15	MG/L
10-Nov-2012	001	CBOD5	0	10	0	15	MG/L
10-Oct-2012	001	CBOD5	0	10	0	15	MG/L
10-Sep-2012	001	CBOD5	0	10	0	15	MG/L
10-Aug-2012	001	CBOD5	0	10	0	15	MG/L
10-Jul-2012	001	CBOD5	0	10	0	15	MG/L
10-Jun-2012	001	CBOD5	0	10	0	15	MG/L
10-May-2012	001	CBOD5	0	10	0	15	MG/L
10-Apr-2012	001	CBOD5	0	10	0	15	MG/L
10-Mar-2012	001	CBOD5	0	10	0	15	MG/L
10-Feb-2012	001	CBOD5	0	10	0	15	MG/L
10-Jan-2012	001	CBOD5	0	10	0	15	MG/L
10-Dec-2011	001	CBOD5	0	10	0	15	MG/L
10-Nov-2011	001	CBOD5	0	10	0	15	MG/L
10-Oct-2011	001	CBOD5	0.3	10	1.2	15	MG/L
10-Sep-2011	001	CBOD5	0	10	0	15	MG/L
10-Aug-2011	001	CBOD5	0	10	0	15	MG/L
10-Jul-2011	001	CBOD5	0.5	10	2.1	15	MG/L
10-Jun-2011	001	CBOD5	2.4	10	2.7	15	MG/L
10-May-2011	001	CBOD5	3.8	10	5.8	15	MG/L
10-Apr-2011	001	CBOD5	2.6	10	3.1	15	MG/L
10-Mar-2011	001	CBOD5	6.6	10	5.1	15	MG/L
10-Feb-2011	001	CBOD5	8.1	10	3	15	MG/L

		Avg:	0.56		0.64
		90th %:	2.41		2.73

Ratio of Composite Long Term Average to Monthly Average Limit		
	Conc. Avg	Conc. Max.
Avg:	5.6%	4.3%
90% Maximum:	24.1%	18.2%

Attachment 18 – Summary of Whole Effluent Testing Results

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Northern Regional Office
13901 Crown Court **Woodbridge, VA 22193** **(703) 583-3800**

SUBJECT: TOXICS MANAGEMENT PROGRAM DATA REVIEW
Town of Orange WWTP (VA0021385)
REVIEWER: Douglas Frasier
DATE: 7 January 2016

PREVIOUS REVIEW: 16 January 2014

DATA REVIEWED:

This review covers the second (2^{nd}) annual chronic toxicity tests conducted in November 2015 at Outfall 001.

DISCUSSION:

The results of these toxicity tests, along with the results of all previous toxicity tests performed on effluent samples collected from Outfall 001 are summarized in Table 1.

The chronic toxicity of the effluent samples was determined with a 3-brood static daily renewal survival and reproduction test using *C. dubia* and a 7-day static daily renewal survival and growth test using *P. promelas*.

CONCLUSION:

The chronic toxicity tests are valid and the results are acceptable. The test results indicate that the effluent samples from Outfall 001 exhibited no chronic toxicity for the test species.

BIOMONITORING RESULTS
Town of Orange Wastewater Treatment Plant (VA0021385)

Table 1
Summary of Toxicity Test Results

TEST DATE	TEST TYPE/ORGANISM	IC_{25} (%)	48-H LC_{50} (%)	NOEC/ NOAEC (%)	TU_a	TU_c	% SURV	REMARKS
08/09/01	Acute *C. dubia*		>100	100	1.0		100	1st annual
08/09/01	Acute *P. promelas*		>100		**Invalid**		100	NOAEC required
08/07/01	Chronic *C. dubia*	58.1	>100	100 S **7.5 R**		**13.33**	100	
08/07/01	Chronic *P. promelas*	76.6	>100	100 S 14.9 G		6.71	98	
11/13/01	Acute *P. promelas*		>100	100	1.0		100	Retest
04/11/02	Acute *C. dubia*		>100	100	1.0		100	2nd annual
04/11/02	Acute *P. promelas*		>100	100	1.0		100	
04/09/02	Chronic *C. dubia*	31.8	>100	100 S 21 R		4.76	90	
04/09/02	Chronic *P. promelas*	79.6	>100	60.5 SG		1.65	68	
06/11/03	Acute *C. dubia*		>100	100	1.0		100	3rd annual
06/11/03	Acute *P. promelas*		>100	100	1.0		100	
06/10/03	Chronic *C. dubia*	50.9	>100	100 S 60.5 R		1.65	100	
06/10/03	Chronic *P. promelas*	30.3	>100	60.5 S **10.5 G**		**9.52**	65	
08/11/04	Acute *C. dubia*		>100	100	1.0		100	4th annual
08/11/04	Acute *P. promelas*		>100	100	1.0		95	
08/10/04	Chronic *C. dubia*	33.8	>100	100 S 21 R		4.76	100	
08/10/04	Chronic *P. promelas*	>100	>100	60.5 SG		1.65	83	
10/19/05	Acute *C. dubia*		>100	100	1.0		95	5th annual
10/19/05	Acute *P. promelas*		>100	100	1.0		100	
10/18/05	Chronic *C. dubia*	63.3	>100	100 S 60.5 R		1.65	100	
10/18/05	Chronic *P. promelas*	48.6	>100	21 SG		4.76	65	
Permit Reissued 13 June 2006								
10/31/06	Chronic *C. dubia*	>100	>100	100 SR		1	100	1st annual
10/31/06	Chronic *P. promelas*	79.2	>100	100 S 65.5 G		1.53	78	
08/14/07	Chronic *C. dubia*	70.4	>100	100 S 66 R		1.52	100	2nd annual
08/14/07	Chronic *P. promelas*	18.7	>100	**<7.8 S** **<7.8 G**		**>12.82**	80	
10/09/07	Chronic *P. promelas*	50.3	>100	31 S 31 G		3.22	63	Retest
10/07/08	Chronic *C. dubia*	>100	>100	100 SR		1	100	3rd annual
10/07/08	Chronic *P. promelas*	88.8	>100	100 S 66 G		1.52	90	

TEST DATE	TEST TYPE/ORGANISM	IC25 (%)	48-H LC_{50} (%)	NOEC/ NOAEC (%)	TU_a	TU_c	% SURV	REMARKS
10/06/09	Chronic *C. dubia*	75.3	>100	100 S 66 R		1.52	90	4th annual
10/06/09	Chronic *P. promelas*	87.0	>100	100 S 66 G		1.52	90	NH_3 = 1.7; 2.0; 4.1 mg/L
11/09/10	Chronic *C. dubia*	>100	>100	100 SR		1	100	5th annual
11/09/10	Chronic *P. promelas*	>100	>100	100 SG		1	100	
Permit Reissued 2 August 2011								
11/29/11	Chronic *C. dubia*	>100	>100	100 SR		1	100	1st quarterly
11/29/11	Chronic *P. promelas*	>100	>100	100 SG		1	98	
02/28/12	Chronic *C. dubia*	>100	>100	100 SR		1	100	2nd quarterly
02/28/12	Chronic *P. promelas*	>100	>100	100 SG		1	98	
06/05/12	Chronic *C. dubia*	>100	>100	100 SR		1	80	3rd quarterly
06/05/12	Chronic *P. promelas*	>100	>100	100 SG		1	93	
08/28/12	Chronic *C. dubia*	>100	>100	100 SR		1	90	4th quarterly
08/28/12	Chronic *P. promelas*	>100	>100	100 SG		1	100	
11/27/12	Chronic *C. dubia*	>100	>100	100 SR		1	80	5th quarterly
11/27/12	Chronic *P. promelas*	>100	>100	100 SG		1	98	
03/05/13	Chronic *C. dubia*	>100	>100	100 SR		1	100	6th quarterly
03/05/13	Chronic *P. promelas*	>100	>100	100 SG		1	100	
04/02/13	Chronic *C. dubia*	>100	>100	100 SR		1	100	7th quarterly
04/02/13	Chronic *P. promelas*	>100	>100	100 SG		1	98	
04/02/13	Chronic *C. dubia*	>100	>100	100 SR		1	100	8th quarterly
04/02/13	Chronic *P. promelas*	>100	>100	100 SG		1	98	
01/07/14	Chronic *C. dubia*	>100	>100	100 SR		1	100	1st annual
01/07/14	Chronic *P. promelas*	>100	>100	100 SG		1	100	
11/10/15	Chronic *C. dubia*	86	>100	100 S 65 R		1.53	90	2nd annual
11/10/15	Chronic *P. promelas*	>100	>100	100 SG		1	100	

FOOTNOTES:

A **bold** faced value indicates the test fails the toxicity criteria.

ABBREVIATIONS:

S – Survival; R – Reproduction; G – Growth

% SURV – Percent survival in 100% effluent

Attachment 19 – Public Notice

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Orange County, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2016 to XXX, 2016

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Town of Orange, 119 Belleview Ave, Orange, VA 22960, VA0021385

NAME AND ADDRESS OF FACILITY: Town of Orange Wastewater Treatment Plant, 13222 Spicers Mill Road, Orange, VA 22960

PROJECT DESCRIPTION: The Town of Orange has applied for a reissuance of a permit for the public The Town of Orange Wastewater Treatment Plant. The applicant proposes to treated sewage wastewaters from residential areas at a rate of 3.0 million gallons per day into a water body. The facility proposes to treated sewage in the Rapidan River in Orange County in the Rappahannock watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, carbonaceous biochemical oxygen demand, total suspended solids, dissolved oxygen, E. coli, total Kjeldahl nitrogen, total nitrogen, and total phosphorus.

This facility is subject to the requirements of 9 VAC 25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, e-mail or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Caitlin Shipman
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3859 E-mail: caitlin.shipman@deq.virginia.gov

Attachment 20 – Comments from Virginia Department of Recreation and Conservation (DCR)

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

David C. Dowling
Deputy Director of Soil and Water Conservation and Dam Safety

Thomas L. Smith
Deputy Director of Operations

March 2, 2016

Susan Mackert
DEQ – Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193

Re: VA0021385, Town of Orange WWTP

Dear Ms. Mackert:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Rapidan River – Blue – Cedar – Barbour Runs Stream Conservation Unit (SCU) is located within the project site. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The Rapidan River – Blue/Cedar/Barbour/Summer Duck Runs SCU has been given a biodiversity ranking of B3, which represents a site of high significance. The natural heritage resource associated with this site is:

Elliptio lanceolata	Yellow lance	G2G3/S2S3/SOC/NL
Lasmigona subviridis	Green floater	G3/S2/NL/LT
NP-Rapidan-Upper Rappahannock Second Order Stream		G3/S3/NL/NL

The Yellow lance occurs in mid-sized rivers and second and third order streams. To survive, it needs a silt-free, stable streambed and well-oxygenated water that is free of pollutants. This species has been the subject of taxonomic debate in recent years (NatureServe, 2009). Currently in Virginia, the Yellow lance is recognized from populations in the Chowan, James, York, and Rappahannock drainages. Its range also extends into Neuse-Tar river system in North Carolina. In recent years, significant population declines have been noted across its range (NatureServe, 2009). Please note that this species is currently classified as a species of concern by the United States Fish and Wildlife Service (USFWS) however, this designation have no official legal status.

The Green floater (*Lasmigona subviridis*, G3/S2/NL/LT), a rare freshwater mussel, ranges from New York to North Carolina in the Atlantic Slope drainages, as well as the New and Kanawha River systems in Virginia and West Virginia (NatureServe, 2009). In Virginia, there are records from the New, Roanoke, Chowan, James, York, Rappahannock, and Potomac River drainages. Throughout its range, the Green floater appears to prefer the pools and eddies with gravel and sand bottoms of smaller rivers and creeks, smaller channels of large rivers (Ortman, 1919) or small to medium-sized streams (Riddick, 1973). Please note that this species has been listed as state threatened by the Virginia Department of Game and Inland Fisheries (VDGIF).

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species. The Yellow lance may be particularly sensitive to chemical pollutants and exposure to fine sediments from erosion (NatureServe, 2009).

The documented Aquatic Natural Community is based on Virginia Commonwealth University's INSTAR (*Interactive Stream Assessment Resource*) database which includes over 2,000 aquatic (stream and river) collections statewide for fish and macroinvertebrate. These data represent fish and macroinvertebrate assemblages, instream habitat, and stream health assessments. The associated Aquatic Natural Community is significant on multiple levels. First, this stream is a grade B, per the VCU-Center for Environmental Sciences (CES), indicating its relative regional significance, considering its aquatic community composition and the present-day conditions of other streams in the region. This stream reach also holds a "Healthy" stream designation per the INSTAR Virtual Stream Assessment (VSS) score. This score assesses the similarity of this stream to ideal stream conditions of biology and habitat for this region. Lastly, this stream contributes to high Biological Integrity at the watershed level (6^{th} order) based on number of native/non-native, pollution-tolerant/intolerant and rare, threatened or endangered fish and macroinvertebrate species present.

Threats to the significant Aquatic Natural Community and the surrounding watershed include water quality degradation related to point and non-point pollution, water withdrawal and introduction of non-native species.

In addition, the Rapidan River has been designated by the VDGIF as a "Threatened and Endangered Species Water". The species associated with this T & E Water is the Green floater.

To minimize impacts to aquatic resources, DCR supports the use of uv/ozone to replace chlorination disinfection overall and utilization of new technologies as they become available to improve water quality. Due to the legal status of the Green floater, DCR also recommends coordination with Virginia's regulatory authority for the management and protection of this species, the VDGIF, to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The VDGIF maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Should you have any questions or concerns, feel free to contact René Hypes at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

S. René Hypes
Project Review Coordinator

Cc: Ernie Aschenbach, VDGIF
Susan Lingenfelser, USFWS

Literature Cited

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: April 27, 2010).

Ortman, A.E. 1919. A monograph of the naiades of Pennsylvania, Part 3: Systematic account of the genera and species. Mem. Carnegie Mus. 8:1-384.

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